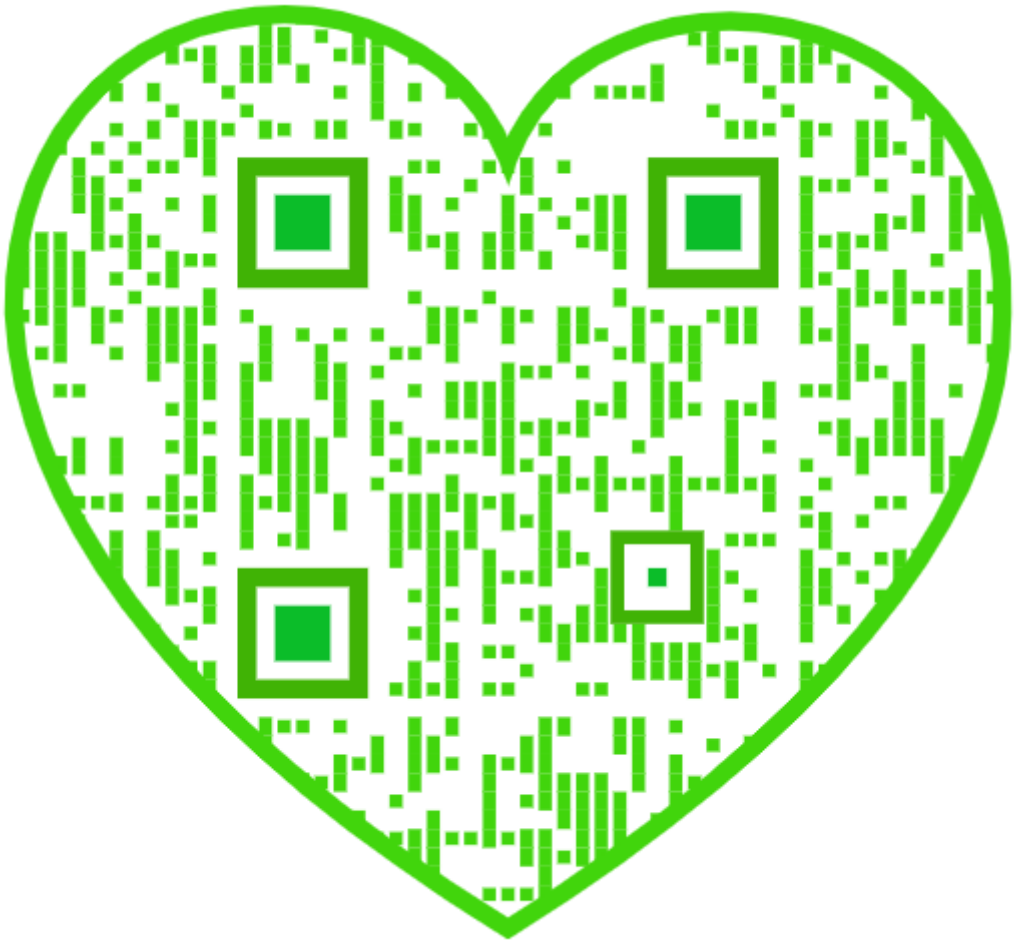
ALL ABOUT COFFEE

WILLIAM H. UKERS



COFFEE BRANCHES, FLOWERS, AND FRUIT

SHOWING THE BERRY IN ITS VARIOUS RIPENING STAGES FROM FLOWER TO CHERRY
(Inset: 1, green bean; 2, silver skin; 3, parchment; 4, fruit pulp.)
Painted from life by Blendon Campbell

ALL ABOUT COFFEE

By

WILLIAM H. UKERS, M. A.

Editor

THE TEA AND COFFEE TRADE JOURNAL

NEW YORK

THE TEA AND COFFEE TRADE JOURNAL COMPANY

1922

7168-

COPYRIGHT 1922
BY
THE TEA AND COFFEE TRADE JOURNAL COMPANY
NEW YORK

International Copyright Secured
All Rights Reserved in U. S. A. and Foreign Countries

PRINTED IN U. S. A.

To My Wife

HELEN DE GRAFF UKERS

PREFACE

SEVENTEEN years ago the author of this work made his first trip abroad to gather material for a book on coffee. Subsequently he spent a year in travel among the coffee-producing countries. After the initial surveys, correspondents were appointed to make researches in the principal European libraries and museums; and this phase of the work continued until April, 1922. Simultaneous researches were conducted in American libraries and historical museums up to the time of the return of the final proofs to the printer in June, 1922.

Ten years ago the sorting and classification of the material was begun. The actual writing of the manuscript has extended over four years.

Among the unique features of the book are the Coffee Thesaurus; the Coffee Chronology, containing 492 dates of historical importance; the Complete Reference Table of the Principal Kinds of Coffee Grown in the World; and the Coffee Bibliography, containing 1,380 references.

The most authoritative works on this subject have been Robinson's *The Early History of Coffee Houses in England,* published in London in 1893; and Jardin's *Le Café,* published in Paris in 1895. The author wishes to acknowledge his indebtedness to both for inspiration and guidance. Other works, Arabian, French, English, German, and Italian, dealing with particular phases of the subject, have been laid under contribution; and where this has been done, credit is given by foot-note reference. In all cases where it has been possible to do so, however, statements of historical facts have been verified by independent research. Not a few items have required months of tracing to confirm or to disprove.

There has been no serious American work on coffee since Hewitt's *Coffee: Its History, Cultivation and Uses,* published in 1872; and Thurber's *Coffee from Plantation to Cup,* published in 1881. Both of these are now out of print, as is also Walsh's *Coffee: Its History, Classification and Description,* published in 1893.

The chapters on The Chemistry of Coffee and The Pharmacology of Coffee have been prepared under the author's direction by Charles W. Trigg, industrial fellow of the Mellon Institute of Industrial Research.

The author wishes to acknowledge, with thanks, valuable assistance and numerous courtesies by the officials of the following institutions:

British Museum, and Guildhall Museum, London; Bibliothèque Nationale, Paris; Congressional Library, Washington; New York Public Library, Metropolitan Museum of Art, and New York Historical Society, New York; Boston Public Library, and Boston Museum of Fine Arts; Smithsonian Institution, Washington; State Historical Museum, Madison, Wis.; Maine Historical Society, Portland; Chicago Historical Society; New Jersey Historical Society, Newark; Harvard University Library; Essex Institute, Salem, Mass.; Peabody Institute, Baltimore.

Thanks and appreciation are due also to:

Charles James Jackson, London, for permission to quote from his *Illustrated History of English Plate;*

Francis Hill Bigelow, author; and The Macmillan Company, publishers, for permission to reproduce illustrations from *Historic Silver of the Colonies;*

H. G. Dwight, author; and Charles Scribner's Sons, publishers, for permission to quote from *Constantinople, Old and New,* and from the article on "Turkish Coffee Houses" in *Scribner's Magazine;*

Walter G. Peter, Washington, D. C., for permission to photograph and reproduce pictures of articles in the Peter collection at the United States National Museum;

Mary P. Hamlin and George Arliss, authors, and George C. Tyler, producer, for permission to reproduce the Exchange coffee house setting of the first act of *Hamilton;*

Judge A. T. Clearwater, Kingston, N. Y.; R. T. Haines Halsey, and Francis P. Garvan, New York, for permission to publish pictures of historic silver coffee pots in their several collections;

The secretaries of the American Chambers of Commerce in London, Paris, and Berlin;

Charles Cooper, London, for his splendid co-operation and for his special contribution to chapter XXXV;

Alonzo H. De Graff, London, for his invaluable aid and unflagging zeal in directing the London researches;

To the Coffee Trade Association, London, for assistance rendered;

To G. J. Lethem, London, for his translations from the Arabic;

Geoffrey Sephton, Vienna, for his nice co-operation;

L. P. de Bussy of the Koloniaal Institute, Amsterdam, Holland, for assistance rendered;

Burton Holmes and Blendon R. Campbell, New York, for courtesies;

John Cotton Dana, Newark, N. J., for assistance rendered;

Charles H. Barnes, Medford, Mass., for permission to publish the photograph of Peregrine White's Mayflower mortar and pestle;

Andrew L. Winton, Ph.D., Wilton, Conn., for permission to quote from his *The Microscopy of Vegetable Foods* in the chapter on The Microscopy of Coffee and to reprint Prof. J. Moeller's and Tschirch and Oesterle's drawings;

F. Hulton Frankel, Ph.D., Edward M. Frankel, Ph.D., and Arno Viehoever, for their assistance in preparing the chapters on The Botany of Coffee and The Microscopy of Coffee;

A. L. Burns, New York, for his assistance in the correction and revision of chapters XXV, XXVI, XXVII, and XXXIV, and for much historical information supplied in connection with chapters XXX and XXXI;

Edward Aborn, New York, for his help in the revision of chapter XXXVI;

George W. Lawrence, former president, and T. S. B. Nielsen, president, of the New York Coffee and Sugar Exchange, for their assistance in the revision of chapter XXXI;

Helio Lobo, Brazilian consul general, New York; Sebastião Sampaio, commercial attaché of the Brazilian Embassy, Washington; and Th. Langgaard de Menezes, American representative of the Sociedade Promotora da Defeza do Café;

Felix Coste, secretary and manager, the National Coffee Roasters Association; and C. B. Stroud, superintendent, the New York Coffee and Sugar Exchange, for information supplied and assistance rendered in the revision of several chapters;

F. T. Holmes, New York, for his help in the compilation of chronological and descriptive data on coffee-roasting machinery;

Walter Chester, New York, for critical comments on chapter XXVIII.

The author is especially indebted to the following, who in many ways have contributed to the successful compilation of the Complete Reference Table in chapter XXIV, and of those chapters having to do with the early history and development of the green coffee and the wholesale coffee-roasting trades in the United States:

George S. Wright, Boston; A. E. Forbes, William Fisher, Gwynne Evans, Jerome J. Schotten, and the late Julius J. Schotten, St. Louis; James H. Taylor, William Bayne, Jr., A. J. Dannemiller, B. A. Livierato, S. A. Schonbrunn, Herbert Wilde, A. C. Fitzpatrick, Charles Meehan, Clarence Creighton, Abram Wakeman, A. H. Davies, Joshua Walker, Fred P. Gordon, Alex. H. Purcell, George W. Vanderhoef, Col. William P. Roome, W. Lee Simmonds, Herman Simmonds, W. H. Aborn, B. Lahey, John C. Loudon, J. R. Westfal, Abraham Reamer, R. C. Wilhelm, C. H. Stewart, and the late August Haeussler, New York; John D. Warfield, Ezra J. Warner, S. O. Blair, and George D. McLaughlin, Chicago; W. H. Harrison, James Heekin, and Charles Lewis, Cincinnati; Albro Blodgett and A. M. Woolson, Toledo; R. V. Engelhard and Lee G. Zinsmeister, Louisville; E. A. Kahl, San Francisco; S. Jackson, New Orleans; Lewis Sherman, Milwaukee; Howard F. Boardman, Hartford; A. H. Devers, Portland, Ore.; W. James Mahood, Pittsburgh; William B. Harris, East Orange, N. J.

New York, June 17, 1922.

FOREWORD

Some introductory remarks on the lure of coffee, its place in a rational dietary, its universal psychological appeal, its use and abuse

CIVILIZATION in its onward march has produced only three important non-alcoholic beverages — the extract of the tea plant, the extract of the cocoa bean, and the extract of the coffee bean.

Leaves and beans — these are the vegetable sources of the world's favorite non-alcoholic table-beverages. Of the two, the tea leaves lead in total amount consumed; the coffee beans are second; and the cocoa beans are a distant third, although advancing steadily. But in international commerce the coffee beans occupy a far more important position than either of the others, being imported into non-producing countries to twice the extent of the tea leaves. All three enjoy a world-wide consumption, although not to the same extent in every nation; but where either the coffee bean or the tea leaf has established itself in a given country, the other gets comparatively little attention, and usually has great difficulty in making any advance. The cocoa bean, on the other hand, has not risen to the position of popular favorite in any important consuming country, and so has not aroused the serious opposition of its two rivals.

Coffee is universal in its appeal. All nations do it homage. It has become recognized as a human necessity. It is no longer a luxury or an indulgence; it is a corollary of human energy and human efficiency. People love coffee because of its two-fold effect — the pleasurable sensation and the increased efficiency it produces.

Coffee has an important place in the rational dietary of all the civilized peoples of earth. It is a democratic beverage. Not only is it the drink of fashionable society, but it is also a favorite beverage of the men and women who do the world's work, whether they toil with brain or brawn. It has been acclaimed "the most grateful lubricant known to the human machine," and "the most delightful taste in all nature."

No "food drink" has ever encountered so much opposition as coffee. Given to the world by the church and dignified by the medical profession, nevertheless it has had to suffer from religious superstition and medical prejudice. During the thousand years of its development it has experienced fierce political opposition, stupid fiscal restrictions, unjust taxes, irksome duties; but, surviving all of these, it has triumphantly moved on to a foremost place in the catalog of popular beverages.

But coffee is something more than a beverage. It is one of the world's greatest adjuvant foods. There are other auxiliary foods, but none that excels it for palatability and comforting effects, the psychology of which is to be found in its unique flavor and aroma.

Men and women drink coffee because it adds to their sense of well-being. It not only smells good and tastes good to all mankind, heathen or civilized, but all respond to

its wonderful stimulating properties. The chief factors in coffee goodness are the caffein content and the caffeol. Caffein supplies the principal stimulant. It increases the capacity for muscular and mental work without harmful re-action. The caffeol supplies the flavor and the aroma — that indescribable Oriental fragrance that wooes us through the nostrils, forming one of the principal elements that make up the lure of coffee. There are several other constituents, including certain innocuous so-called caffetannic acids, that, in combination with the caffeol, give the beverage its rare gustatory appeal.

The year 1919 awarded coffee one of its brightest honors. An American general said that coffee shared with bread and bacon the distinction of being one of the three nutritive essentials that helped win the World War for the Allies. So this symbol of human brotherhood has played a not inconspicuous part in "making the world safe for democracy." The new age, ushered in by the Peace of Versailles and the Washington Conference, has for its hand-maidens temperance and self-control. It is to be a world democracy of right-living and clear thinking; and among its most precious adjuncts are coffee, tea, and cocoa — because these beverages must always be associated with rational living, with greater comfort, and with better cheer.

Like all good things in life, the drinking of coffee may be abused. Indeed, those having an idiosyncratic susceptibility to alkaloids should be temperate in the use of tea, coffee, or cocoa. In every high-tensioned country there is likely to be a small number of people who, because of certain individual characteristics, can not drink coffee at all. These belong to the abnormal minority of the human family. Some people can not eat strawberries; but that would not be a valid reason for a general condemnation of strawberries. One may be poisoned, says Thomas A. Edison, from too much food. Horace Fletcher was certain that over-feeding causes all our ills. Over-indulgence in meat is likely to spell trouble for the strongest of us. Coffee is, perhaps, less often abused than wrongly accused. It all depends. A little more tolerance!

Trading upon the credulity of the hypochondriac and the caffein-sensitive, in recent years there has appeared in America and abroad a curious collection of so-called coffee substitutes. They are "neither fish nor flesh, nor good red herring." Most of them have been shown by official government analyses to be sadly deficient in food value — their only alleged virtue. One of our contemporary attackers of the national beverage bewails the fact that no palatable hot drink has been found to take the place of coffee. The reason is not hard to find. There can be no substitute for coffee. Dr. Harvey W. Wiley has ably summed up the matter by saying, "A substitute should be able to perform the functions of its principal. A substitute to a war must be able to fight. A bounty-jumper is not a substitute."

It has been the aim of the author to tell the whole coffee story for the general reader, yet with the technical accuracy that will make it valuable to the trade. The book is designed to be a work of useful reference covering all the salient points of coffee's origin, cultivation, preparation, and development, its place in the world's commerce and in a rational dietary.

Good coffee, carefully roasted and properly brewed, produces a natural beverage that, for tonic effect, can not be surpassed, even by its rivals, tea and cocoa. Here is a drink that ninety-seven per cent of individuals find harmless and wholesome, and without which life would be drab indeed — a pure, safe, and helpful stimulant compounded in nature's own laboratory, and one of the chief joys of life!

CONTENTS

A COFFEE THESAURUS

Encomiums and descriptive phrases applied to the plant, the berry, and the beverage..Page xxvii

THE EVOLUTION OF A CUP OF COFFEE

Showing the various steps through which the bean passes from plantation to cup.....Page xxix

CHAPTER I

Dealing with the Etymology of Coffee

Origin and translation of the word from the Arabian into various languages — Views of many writers .....Page 1

CHAPTER II

History of Coffee Propagation

A brief account of the cultivation of the coffee plant in the Old World, and of its introduction into the New — A romantic coffee adventure.....Page 5

CHAPTER III

Early History of Coffee Drinking

Coffee in the Near East in the early centuries — Stories of its origin — Discovery by physicians and adoption by the Church — Its spread through Arabia, Persia, and Turkey — Persecutions and intolerances — Early coffee manners and customs.....Page 11

CHAPTER IV

Introduction of Coffee into Western Europe

When the three great temperance beverages, cocoa, tea, and coffee, came to Europe — Coffee first mentioned by Rauwolf in 1582 — Early days of coffee in Italy — How Pope Clement VIII baptized it and made it a truly Christian beverage — The first European coffee house, in Venice, 1645 — The famous Caffè Florian — Other celebrated Venetian coffee houses of the eighteenth century — The romantic story of Pedrocchi, the poor lemonade-vender, who built the most beautiful coffee house in the world .....Page 25

CHAPTER V

The Beginnings of Coffee in France

What French travelers did for coffee — the introduction of coffee by P. de la Roque into Marseilles in 1644 — The first commercial importation of coffee from Egypt — The first French coffee house — Failure of the attempt by physicians of Marseilles to discredit coffee — Soliman Aga introduces coffee into Paris — Cabarets à caffe — Celebrated works on coffee by French writers.....Page 31

CONTENTS

CHAPTER VI

THE INTRODUCTION OF COFFEE INTO ENGLAND

The first printed reference to coffee in English — Early mention of coffee by noted English travelers and writers — The Lacedaemonian "black broth" controversy — How Conopios introduced coffee drinking at Oxford — The first English coffee house in Oxford — Two English botanists on coffee.....Page 35

CHAPTER VII

THE INTRODUCTION OF COFFEE INTO HOLLAND

How the enterprising Dutch traders captured the first world's market for coffee — Activities of the Netherlands East India Company — The first coffee house at the Hague — The first public auction at Amsterdam in 1711, when Java coffee brought forty-seven cents a pound, green Page 43

CHAPTER VIII

THE INTRODUCTION OF COFFEE INTO GERMANY

The contributions made by German travelers and writers to the literature of the early history of coffee — The first coffee house in Hamburg opened by an English merchant — Famous coffee houses of old Berlin — The first coffee periodical and the first kaffee-klatsch — Frederick the Great's coffee roasting monopoly — Coffee persecutions — "Coffee-smellers" — The first coffee king.....Page 45

CHAPTER IX

TELLING HOW COFFEE CAME TO VIENNA

The romantic adventure of Franz George Kolschitzky, who carried "a message to Garcia" through the enemy's lines and won for himself the honor of being the first to teach the Viennese the art of making coffee, to say nothing of falling heir to the supplies of the green beans left behind by the Turks; also the gift of a house from a grateful municipality, and a statue after death — Affectionate regard in which "Brother-heart" Kolschitzky is held as the patron saint of the Vienna *Kaffeesieder* — Life in the early Vienna cafés.....Page 49

CHAPTER X

THE COFFEE HOUSES OF OLD LONDON

One of the most picturesque chapters in the history of coffee — The first coffee house in London — The first coffee handbill, and the first newspaper advertisement for coffee — Strange coffee mixtures — Fantastic coffee claims — Coffee prices and coffee licenses — Coffee club of the Rota — Early coffee-house manners and customs — Coffee-house keepers' tokens — Opposition to the coffee house — "Penny universities" — Weird coffee substitutes — The proposed coffee-house newspaper monopoly — Evolution of the club — Decline and fall of the coffee house — Pen pictures of coffee-house life — Famous coffee houses of the seventeenth and eighteenth centuries — Some Old World pleasure gardens — Locating the notable coffee houses..Page 53

CHAPTER XI

HISTORY OF THE EARLY PARISIAN COFFEE HOUSES

The introduction of coffee into Paris by Thévenot in 1657 — How Soliman Aga established the custom of coffee drinking at the court of Louis XIV — Opening of the first coffee houses — How the French adaptation of the Oriental coffee house first appeared in the real French café of François Procope — Important part played by the coffee houses in the development of French literature and the stage — Their association with the Revolution and the founding of the Republic — Quaint customs and patrons — Historic Parisian cafés.....Page 91

CONTENTS

CHAPTER XII

Introduction of Coffee into North America

Captain John Smith, founder of the Colony of Virginia, is the first to bring to North America a knowledge of coffee in 1607 — The coffee grinder on the Mayflower — Coffee drinking in 1668 — William Penn's coffee purchase in 1683 — Coffee in colonial New England — The psychology of the Boston "tea party," and why the United States became a nation of coffee drinkers instead of tea drinkers, like England — The first coffee license to Dorothy Jones in 1670 — The first coffee house in New England — Notable coffee houses of old Boston — A sky-scraper coffee-house ..... Page 105

CHAPTER XIII

History of Coffee in Old New York

The burghers of New Amsterdam begin to substitute coffee for "must," or beer, for breakfast in 1668 — William Penn makes his first purchase of coffee in the green bean from New York merchants in 1683 — The King's Arms, the first coffee house — The historic Merchants, sometimes called the "Birthplace of our Union" — The coffee house as a civic forum — The Exchange, Whitehall, Burns, Tontine, and other celebrated coffee houses — The Vauxhall and Ranelagh pleasure gardens ..... Page 115

CHAPTER XIV

Coffee Houses of Old Philadelphia

Ye Coffee House, Philadelphia's first coffee house, opened about 1700 — The two London coffee houses — The City tavern, or Merchants coffee house — How these, and other celebrated resorts, dominated the social, political, and business life of the Quaker City in the eighteenth century ..... Page 125

CHAPTER XV

The Botany of the Coffee Plant

Its complete classification by class, sub-class, order, family, genus, and species — How the Coffea arabica grows, flowers, and bears — Other species and hybrids described — Natural caffein-free coffee — Fungoid diseases of coffee ..... Page 131

CHAPTER XVI

The Microscopy of the Coffee Fruit

How the beans may be examined under the microscope, and what is revealed — Structure of the berry, the green, and the roasted beans — The coffee-leaf disease under the microscope — Value of microscopic analysis in detecting adulteration ..... Page 149

CHAPTER XVII

The Chemistry of the Coffee Bean

By Charles W. Trigg.

Chemistry of the preparation and treatment of the green bean — Artificial aging — Renovating damaged coffees — Extracts — "Caffetannic acid" — Caffein, caffein-free coffee — Caffeol — Fats and oils — Carbohydrates — Roasting — Scientific aspects of grinding and packaging — The coffee brew — Soluble coffee — Adulterants and substitutes — Official methods of analysis ..... Page 155

CONTENTS

CHAPTER XVIII

Pharmacology of the Coffee Drink

By Charles W. Trigg

General physiological action — Effect on children — Effect on longevity — Behavior in the alimentary régime — Place in dietary — Action on bacteria — Use in medicine — Physiological action of "caffetannic acid" — Of caffeol — Of caffein — Effect of caffein on mental and motor efficiency — Conclusions ..... Page 174

CHAPTER XIX

The Commercial Coffees of the World

The geographical distribution of the coffees grown in North America, Central America, South America, the West India Islands, Asia, Africa, the Pacific Islands, and the East Indies — A statistical study of the distribution of the principal kinds — A commercial coffee chart of the world's leading growths, with market names and general trade characteristics Page 189

CHAPTER XX

Cultivation of the Coffee Plant

The early days of coffee culture in Abyssinia and Arabia — Coffee cultivation in general — Soil, climate, rainfall, altitude, propagation, preparing the plantation, shade, wind breaks, fertilizing, pruning, catch crops, pests, and diseases — How coffee is grown around the world — Cultivation in all the principal producing countries ..... Page 197

CHAPTER XXI

Preparing Green Coffee for Market

Early Arabian methods of preparation — How primitive devices were replaced by modern methods — A chronological story of the development of scientific plantation machinery, and the part played by English and American inventors — The marvelous coffee package, one of the most ingenious in all nature — How coffee is harvested — Picking — Preparation by the dry and the wet methods — Pulping — Fermentation and washing — Drying — Hulling, or peeling, and polishing — Sizing, or grading — Preparation methods of different countries Page 245

CHAPTER XXII

The Production and Consumption of Coffee

A statistical study of world production of coffee by countries — Per capita figures of the leading consuming countries — Coffee-consumption figures compared with tea-consumption figures in the United States and the United Kingdom — Three centuries of coffee trading — Coffee drinking in the United States, past and present — Reviewing the 1921 trade in the United States ..... Page 273

CHAPTER XXIII

How Green Coffees Are Bought and Sold

Buying coffee in the producing countries — Transporting coffee to the consuming markets — Some record coffee cargoes shipped to the United States — Transport over seas — Java coffee "ex-sailing vessels" — Handling coffee at New York, New Orleans, and San Francisco — The coffee exchanges of Europe and the United States — Commission men and brokers — Trade and exchange contracts for delivery — Important rulings affecting coffee trading — Some well-known green coffee marks ..... Page 303

CONTENTS

CHAPTER XXIV

Green and Roasted Coffee Characteristics

The trade values, bean characteristics, and cup merits of the leading coffees of commerce, with a "Complete Reference Table of the Principal Kinds of Coffee Grown in the World"—Appearance, aroma, and flavor in cup-testing — How experts test coffee — A typical sample-roasting and cup-testing outfit.....Page 341

CHAPTER XXV

Factory Preparation of Roasted Coffee

Coffee roasting as a business — Wholesale coffee-roasting machinery — Separating, milling, and mixing or blending green coffee, and roasting by coal, coke, gas, and electricity — Facts about coffee roasting — Cost of roasting — Green-coffee shrinkage table — "Dry" and "wet" roasts — On roasting coffee efficiently — A typical coal roaster — Cooling and stoning — Finishing or glazing — Blending roasted coffees — Blends for restaurants — Grinding and packaging — Coffee additions and fillers — Treated coffees, and dry extracts.....Page 379

CHAPTER XXVI

Wholesale Merchandising of Coffee

How coffees are sold at wholesale — The wholesale salesman's place in merchandising — Some coffee costs analyzed — Handy coffee-selling chart — Terms and credits — About package coffees — Various types of coffee containers — Coffee package labels — Coffee package economies — Practical grocer helps — Coffee sampling — Premium method of sales promotion .....Page 407

CHAPTER XXVII

Retail Merchandising of Roasted Coffee

How coffees are sold at retail — The place of the grocer, the tea and coffee dealer, the chain store, and the wagon-route distributer in the scheme of distribution — Starting in the retail coffee business — Small roasters for retail dealers — Model coffee departments — Creating a coffee trade — Meeting competition — Splitting nickels — Figuring costs and profits — A credit policy for retailers — Premiums.....Page 415

CHAPTER XXVIII

A Short History of Coffee Advertising

Early coffee advertising — The first coffee advertisement in 1587 was frank propaganda for the legitimate use of coffee — The first printed advertisement in English — The first newspaper advertisement — Early advertisements in colonial America — Evolution of advertising — Package coffee advertising — Advertising to the trade — Advertising by means of newspapers, magazines, bill-boards, electric signs, motion pictures, demonstrations, and by samples — Advertising for retailers — Advertising by government propaganda — The Joint Coffee Trade publicity campaign in the United States — Coffee advertising efficiency.....Page 431

CHAPTER XXIX

The Coffee Trade in the United States

The coffee business started by Dorothy Jones of Boston — Some early sales — Taxes imposed by Congress in war and peace — The first coffee-plantation-machine, coffee-roaster, coffee-grinder, and coffee-pot patents — Early trade marks for coffee — Beginnings of the coffee urn, the coffee container, and the soluble-coffee business — Chronological record of the most important events in the history of the trade from the eighteenth century to the twentieth Page 467

CONTENTS

CHAPTER XXX

Development of the Green and Roasted Coffee Business in the United States

A brief history of the growth of coffee trading — Notable firms and personalities that have played important parts in green coffee in the principal coffee centers — Green coffee trade organizations — Growth of the wholesale coffee-roasting trade, and names of those who have made history in it — The National Coffee Roasters Association — Statistics of distribution of coffee-roasting establishments in the United States ..... Page 475

CHAPTER XXXI

Some Big Men and Notable Achievements

B. G. Arnold, the first, and Hermann Sielcken, the last of the American "coffee kings" — John Arbuckle, the original package-coffee man — Jabez Burns, the man who revolutionized the roasted-coffee business by his contributions as inventor, manufacturer, and writer — Coffee trade booms and panics — Brazil's first valorization enterprise — War-time government control of coffee — The story of soluble coffee ..... Page 517

CHAPTER XXXII

A History of Coffee in Literature

The romance of coffee, and its influence on the discourse, poetry, history, drama, philosophic writing, and fiction of the seventeenth and eighteenth centuries and on the writers of today — Coffee quips and anecdotes ..... Page 541

CHAPTER XXXIII

Coffee in Relation to the Fine Arts

How coffee and coffee drinking have been celebrated in painting, engraving, sculpture, caricature, lithography, and music — Epics, rhapsodies, and cantatas in praise of coffee — Beautiful specimens of the art of the potter and the silversmith as shown in the coffee service of various periods in the world's history — Some historical relics ..... Page 587

CHAPTER XXXIV

The Evolution of Coffee Apparatus

Showing the development of coffee-roasting, coffee-grinding, coffee-making, and coffee-serving devices from the earliest time to the present day — The original coffee grinder, the first coffee roaster, and the first coffee pot — The original French drip pot, the De Belloy percolator — Count Rumford's improvement — How the commercial coffee roaster was developed — The evolution of filtration devices — The old Carter "pull-out" roaster — Trade customs in New York and St. Louis in the sixties and seventies — The story of the evolution of the Burns roaster — How the gas roaster was developed in France, Great Britain, and the United States ..... Page 615

CHAPTER XXXV

World's Coffee Manners and Customs

How coffee is roasted, prepared, and served in all the leading civilized countries — The Arabian coffee ceremony — The present-day coffee houses of Turkey — Twentieth century improvements in Europe and the United States ..... Page 655

CONTENTS

CHAPTER XXXVI

PREPARATION OF THE UNIVERSAL BEVERAGE

The evolution of grinding and brewing methods — Coffee was first a food, then a wine, a medicine, a devotional refreshment, a confection, and finally a beverage — Brewing by boiling, infusion, percolation, and filtration — Coffee making in Europe in the nineteenth century — Early coffee making in the United States — Latest developments in better coffee making — Various aspects of scientific coffee brewing — Advice to coffee lovers on how to buy coffee, and how to make it in perfection ..... Page 693

A COFFEE CHRONOLOGY

Giving dates and events of historical interest in legend, travel, literature, cultivation, plantation treatment, trading, and in the preparation and use of coffee from the earliest time to the present ..... Page 725

A COFFEE BIBLIOGRAPHY

A list of references gathered from the principal general and scientific libraries — Arranged in alphabetic order of topics ..... Page 738

INDEX

Page 769

ILLUSTRATIONS

Color Plates

	Facing page
Coffee branches, flowers, and fruit (painted by Blendon Campbell) *Frontispiece*	v
Coffea arabica; leaves, flowers, and fruit (painted by M. E. Eaton)	1
The coffee tree bears fruit, leaf, and blossom at the same time	16
A close-up of ripe coffee berries	32
Coffee under the Stars and Stripes	144
Coffee scenes in British India	160
Picking and sacking coffee in Brazil	176
Mild-coffee culture and preparation	192
Coffee scenes in Java	200
Coffee scenes in Sumatra	216
Coffee preparation in Central and South America	248
Typical coffee scenes in Costa Rica	336
Principal varieties of green-coffee beans, natural size and color	352
Coal-roasting plant, New York	408
Coffee scenes in the Near and Far East	544
Primitive transportation methods, Arabia	640
Hulling coffee in Aden, Arabia	656

Black and White Illustrations

	Page
Coffee tree in flower	4
De Clieu and his coffee plant	7
Legendary discovery of coffee drink	10
Title page of Dufour's book	13
Frontispiece from Dufour's book	15
Turkish coffee house, 17th century	21
Serving coffee to a guest, Arabia	23
First printed reference to coffee	24
An 18th-century Italian coffee house	26
Nobility in an early Venetian caffè	27
Goldoni in a Venetian coffee house	28
Florian's famous coffee house	29
Title page of La Roque's work	32
Coffee tree as pictured by La Roque	32
Coffee branch in La Roque's work	33
First printed reference in English	37
Reference in Sherley's travels	39
References in Biddulph's travels	40
Mol's coffee house at Exeter	41
Reference in Sandys' travels	42
Richter's coffee house, Leipsic	46
Coffee house, Germany, 17th century	47
Kolschitzky in his Blue Bottle coffee house	48
First coffee house in Leopoldstadt	50
Statue of Kolschitzky	51
First advertisement for coffee	55
First newspaper advertisement	57
Coffee house, time of Charles II	60
London coffee house, 17th century	61
Coffee house, Queen Anne's time	62
Coffee-house keepers' tokens (plate 1)	63
A broadside of 1663	64
Coffee-house keepers' tokens (plate 2)	65
A broadside of 1667	68
A broadside of 1670	70
A broadside of 1672	70
A broadside of 1674	71
White's and Brooke's coffee houses	78
London coffee-house politicians	78
Great Fair on the frozen Thames	79
Lion's head at Button's	80
Trio of notables at Button's	81
Vauxhall Gardens on a gala night	82
Rotunda in Ranelagh Gardens	83
Garraway's coffee house	84
Button's coffee house	84
Slaughter's coffee house	85
Tom's coffee house	85
Lloyd's coffee house	86
Dick's coffee house	87
Grecian coffee house	87
Don Saltero's coffee house	88
British coffee house	88
French coffee house in London	89

ILLUSTRATIONS

	Page
Ramponaux' Royal Drummer café	90
La Foire St.-Germain	92
Street coffee vender of Paris	92
Armenian decorations in Paris café	93
Corner of historic Café de Procope	93
Café de Procope, Paris	95
Cashier's desk in coffee house, Paris	96
Café Foy	97
Café des Mille Colonnes	99
Café de Paris	101
Interior of a typical Parisian café	103
Chess at the Café de la Régence	104
Types of colonial coffee roasters	106
Early family coffee roaster	106
Historic relics, early New England	107
Mayflower "coffee grinder"	108
Crown coffee house, Boston	108
Coffee devices, Massachusetts colony	109
Coffee devices of western pioneers	110
Coffee pots of colonial days	110
Green Dragon tavern, Boston	111
Metal coffee pots, New York colony	112
Exchange coffee house, Boston	113
President-elect Washington's official welcome at Merchants Coffee House	114
King's Arms coffee house, New York	116
Burns coffee house	117
Merchants coffee house	119
Tontine coffee house	121
Tontine building of 1850	122
Niblo's Garden	122
Coffee relics, Dutch New York	122
New York's Vauxhall Garden of 1803	123
Tavern and grocers' signs, old New York	124
Second London coffee house, Philadelphia	127
Selling slaves, old London coffee house	128
City tavern, Philadelphia	129
Coffee-house scene in "Hamilton"	130
Coffee tree, flowers and fruit	132
Germination of the coffee plant	133
Brazil coffee plantation in flower	134
Coffea arabica, Porto Rico	135
Coffea arabica, flower and fruit, Costa Rica	135
Young *Coffea arabica*, Kona, Hawaii	136
Survivors of first Liberian trees in Java	136
Coffea arabica in flower, Java	137
Liberian coffee tree, Lamoa, P. I.	138
Coffea congensis, 2½ years old	138
Flowering of 5-year-old *Coffea excelsa*	139
Branches of *Coffea excelsa*	140
Coffea stenophylla	140
Near view of *Coffea arabica* berries	141
Wild caffein-free coffee tree	142
Coffee bean characteristics	142
Coffea arabica berries	143
Robusta coffee in flower	144
One-year-old *robusta* estate	145
Coffea Quillou flowers	146
Quillou coffee tree in blossom	147
Coffea Ugandae	148
Coffea arabica under the microscope	149
Cross-section of coffee bean	150
Cross-section of hull and bean	150
Epicarp and pericarp under microscope	151
Endocarp and endosperm under microscope	152
Spermoderm under microscope	152
Tissues of embryo under microscope	152
Coffee-leaf disease under microscope	153
Green and roasted coffee under microscope	153
Green and roasted Bogota under microscope	154
Cross-section of endosperm	156
Portion of the investing membrane	157
Structure of the green bean	157
Ground coffee under microscope	167
Coffee tree in bearing, Lamoa, P. I.	196
Early coffee implements	198
Cross-section of mountain slope, Yemen	198
First steps in coffee-growing	199
Coffee nursery, Guatemala	200
Coffee under shade, Porto Rico	201
Boekit Gompong estate, Sumatra	202
Estate in Antioquia, Colombia	203
Weeding and harrowing, São Paulo	204
Fazenda Dumont, São Paulo	205
Fazenda Guatapara, São Paulo	206
Picking coffee, São Paulo	207
Intensive cultivation, São Paulo	207
Private railroad, São Paulo	208
Coffee culture in São Paulo	209
Heavily laden coffee tree, Bogota	210
Picking coffee, Bogota	211
Altamira Hacienda, Venezuela	212
Carmen Hacienda, Venezuela	213
Heavy fruiting, *Coffea robusta*, Java	214
Road through coffee estate, Java	215
Native picking coffee, Sumatra	216
Administrator's bungalow, Java	216
Administrator's bungalow, Sumatra	217
Coffee culture in Guatemala	218
Indians picking coffee, Guatemala	219
Bungalow, coffee estate, Guatemala	220
Thirty-year-old coffee trees, Mexico	221
Mexican coffee picker	222
Receiving coffee, Mexico	223
Heavily laden coffee tree, Porto Rico	224
Coffee cultivation, Costa Rica	225
Picking Costa Rica coffee	226
Mountain coffee estate, Costa Rica	226
Mysore coffee estate	227
Coffee growing under shade, India	228
Coffee estate at Harar	229
Wild coffee near Adis Abeba	231
Mocha coffee growing on terraces	232
Picking Blue Mountain berries, Jamaica	233

ILLUSTRATIONS

	Page
Coffee pickers, Guadeloupe	234
Coffee in blossom, Panama	235
Robusta coffee, Cochin-China	237
Bourbon trees, French Indo-China	238
Picking coffee in Queensland	239
Coffee in bloom, Kona, Hawaii	240
Coffee at Hamakua, Hawaii	241
Coffee trees, South Kona, Hawaii	242
Plantation near Sagada, P. I	243
Coffee preparation, São Paulo	244
Walker's original disk pulper	246
Early English coffee peeler	246
Group of English cylinder pulpers	247
Copper covers for pulper cylinders	248
Granada unpulped coffee separator	249
Hand-power double-disk pulper	249
Tandem coffee pulper	250
Horizontal coffee washer	251
Vertical coffee washer	251
Coban pulper, Venezuela	252
Niagara power coffee huller	252
British and American coffee driers	253
American Guardiola drier	254
Smout peeler and polisher	254
Smout peeler and polisher, exposed	255
O'Krassa's coffee drier	255
Six well-known hullers and separators	256
El Monarca coffee classifier	257
Hydro-electric installation, Guatemala	258
Preparing Brazil coffee for market	259
Working coffee on the drying flats	260
Fermenting and washing tanks, São Paulo.	260
Drying grounds, Fazenda Schmidt	261
Preparing Colombian coffee for market	262
Old-fashioned ox-power huller	263
Street-car coffee transport, Orizaba	264
Coffee on drying floors, Porto Rico	264
Sun-drying coffee	265
Drying patio, Costa Rica	266
Early Guardiola steam drier	266
Indian women cleaning Mocha coffee	267
Cleaning-and-grading machinery, Aden	268
Drying coffee at Harar	269
Preparing Java coffee for market	270
Coffee transport in Java	271
Meeting of Amsterdam coffee brokers, 1820.	291
Bill of public sale of coffee, 1790	292
Last sample before export, Santos	304
Stamping bags for export	304
Preparing Brazil coffee for export	305
Grading coffee at Santos	306
The test by the cups, Santos	306
New York importers' warehouse, Santos	307
Pack-mule transport in Venezuela	308
Coffee-carrying cart, Guatemala	308
Pack-oxen fording stream, Colombia	308
Coffee transport, Mexico and South America	309
Donkey coffee-transport at Harar	310
Coffee camels at Harar	310
Selling coffee by tapping hands, Aden	310
Packing and transporting coffee, Aden	311
Coffee camel train at Hodeida	312
Methods of loading coffee, Santos	313
Coffee freighter, Cauca River, Colombia	314
Coffee steamers on the Magdalena	314
Loading heavy cargo on Santa Cecilia	315
Unloading Java coffee from sailing vessel	317
Receiving piers for coffee, New York	318
Unloading coffee, covered pier, New York	319
Receiving and storing coffee, New York	320
Tester at work, Bush Terminal, New York.	321
Loading lighters, Bush Docks, Brooklyn	321
New Terminal system on Staten Island	322
Motor tractor, Bush piers	322
Unloading with modern conveyor	323
Coffee handling, New Orleans piers	324
Coffee in steel-covered sheds, New Orleans.	325
Unloading and storing coffee, San Francisco	326
Modern device for handling green coffee	327
Handling green coffee at European ports	328
New York Coffee and Sugar Exchange	329
Coffee section, Coffee and Sugar Exchange	330
Blackboards, Coffee Exchange	331
"Coffee afloat" blackboard	332
Well known green-coffee marks	339
Bourbon-Santos beans, roasted	343
Flat and Bourbon-Santos beans, roasted	343
Rio beans, roasted	343
Mexican beans, roasted	347
Guatemala beans, roasted	347
Bogota (Colombia) beans, roasted	348
Maracaibo beans, roasted	349
Mocha benas, roasted	351
Washed Java beans, roasted	353
Sample-roasting and cup-testing outfit	357
Modern gas coffee-roasting plant	380
Sixteen-cylinder coal roasting plant	382
Green-coffee separating and milling machines	384
English gas coffee-roasting plant	385
German gas coffee-roasting plant	386
French gas coffee-roasting plant	387
Jumbo coffee roaster, Arbuckle plant	388
Roasting plant of Reid, Murdoch & Co	389
Complete gas coffee-plant installation	390
Burns Jubilee gas roaster	391
Burns coal roaster	392
Open perforated cylinder with flexible back head	392
Trying the roast	394
Monitor gas roaster	394
A group of roasting-room accessories	394
Dumping the roast	395
A four-bag coffee finisher	396
Burns sample-coffee roaster	396

ILLUSTRATIONS

	Page
Lambert coal coffee-roasting outfit	397
Coles No. 22 grinding mill	398
Monitor coffee-granulating machine	398
Challenge pulverizer	398
Burns No. 12 grinding mill	399
Monitor steel-cut grinder, separator, etc.	399
Johnson carton-filling, weighing, and sealing machine	400
Ideal steel-cut mill	400
Smyser package-making and filling machine	401
Automatic coffee-packing machine	402
Complete coffee-cartoning outfit	403
Automatic coffee-weighing machines	404
Units in manufacture of soluble coffee	405
Types of coffee containers	411
Fresh-roasted-coffee idea in retailing	414
Premium tea and coffee dealer's display	416
Chain-store interior	417
Familiar A & P store front	418
Specialist idea in coffee merchandising	419
Monitor gas roaster, cooler, and stoner	420
Royal gas coffee roaster for retailers	420
Burns half-bag roaster, cooler, and stoner	421
Lambert Jr. roasting outfit for retailers	421
Faulder and Simplex gas roasters	422
Coffee roasters used in Paris shops	423
Small German roasters	424
Popular French retail roaster	424
Uno cabinet gas roaster and cooler	424
Educational window exhibit	425
Better-class American grocery, interior	426
Prize-winning window display	427
Americanized English grocer's shop	429
Famous package coffees	430
First coffee advertisement in U. S	433
Coffee advertisement of 1790	434
First colored handbill for package coffee	435
Reverse side of colored handbill	435
St. Louis handbill of 1854	436
Advertising-card copy, 1873	437
Handbill copy of the seventies	437
Box-end sticker, 1833	438
Chase & Sanborn advertisement, 1888	438
A Goldberg cartoon, 1910	439
Copy used by Chase & Sanborn, 1900	439
An effective cut-out	442
How coffee is advertised to the trade	443
Joint Coffee Trade Publicity Committee	447
Magazine and newspaper copy, 1919	449
Copy that stressed helpfulness of coffee, 1919-20	450
Joint Committee's house organ	451
Introductory medical-journal copy	451
Telling the doctors the truth, 1920	452
Joint Committee's attractive booklets	453
More medical journal copy, 1920	454
Magazine and newspaper copy, 1921	455
Educating the doctor, 1922	456
Magazine and newspaper copy, 1922	457
Specimen of early Yuban copy	459
Historical association in advertising	459
Package coffee advertising in 1922	460
The social distinction argument	461
Drawing upon history for atmosphere	461
An impressive electric sign, Chicago	462
How coffee is advertised outdoors	463
Attractive car cards, spring of 1922	464
Effective iced-coffee copy	465
European advertising novelty, New York	465
Coenties Slip, in days of sailing vessels	466
First U. S. coffee-grinder patent	469
Carter's Pull-out roaster patent	469
First registered trade mark for coffee	470
Original Arbuckle coffee packages	471
Merchants coffee house tablet	473
Departed dominant figures in New York green coffee trade	476
"Their association with New York green coffee trade dates back nearly fifty years"	477
Green coffee trade-builders who have passed on	478
"Their race is run, their course is done"	479
112 Front Street, New York, 1879	480
At 87 Wall Street, New York, years ago	480
Wall and Front Streets, New York, 1922	481
Front Street, New York, 1922	483
In the New Orleans coffee district	486
Green coffee district, New Orleans	487
California Street, San Francisco	488
San Francisco's coffee district	489
Pioneer coffee roasters, New York City	493
Oldtime New York coffee roasters	495
Pioneer coffee roasters of the North and East, U. S	500
Pioneer coffee roasters of the South and West, U. S	504
Ground coffee price list of 1862	507
Organization convention, N. C. R. A., 1911	510
Former presidents, N. C. R. A	512
Earliest coffee manuscript	540
Song from "The Coffee House"	555
Dr. Johnson's seat, the Cheshire Cheese	567
Original coffee room, old Cock Tavern	568
Morning gossip in the coffee room	569
"His Warmest Welcome at an Inn"	571
Alexander Pope at Button's, 1730	577
Dutch coffee house, 1650 (by Van Ostade)	586
White's coffee house, 1733 (by Hogarth)	588
Tom King's, 1738 (by Hogarth)	589
Petit Déjeuner (by Boucher)	590
Coffee service in the home of Madame de Pompadour (by Van Loo)	590
Madame Du Barry (by Decreuse)	591
Coffee house at Cairo (by Gérôme)	592

ILLUSTRATIONS

	Page
Kaffeebesuch (by Philippi)	593
Coffee comes to the aid of the Muse (by Ruffio)	593
Mad dog in a coffee house (by Rowlandson)	594
Napoleon and the curé (by Charlet)	595
Coffee, a chanson (music by Colet)	596
Statue of Kolschitzky	597
Betty's Aria, Bach's coffee cantata	598
Café Pedrocchi, Padua	599
Coffee grinder set with jewels	600
Italian wrought-iron coffee roaster	600
Seventeenth-century tea and coffee pots	601
Lantern coffee pot, 1692	602
Folkingham pot, 1715-16	602
Wastell pot, 1720-21	603
Dish of coffee-boy design, 1692	603
Chinese porcelain coffee pot	604
Silver coffee pots, early 18th century	604
Silver coffee pots, 18th century	605
Pottery and porcelain pots	606
Silver coffee pots, late 18th century	607
Porcelain pots, Metropolitan Museum	608
Vienna coffee pot, 1830	609
Spanish coffee pot, 18th century	609
Silver coffee pots in American collections	610
Coffee pot by Wm. Shaw and Wm. Priest	611
Pot of Sheffield plate, 18th century	611
Pot by Ephraim Brasher	611
French silver coffee pot	612
Green Dragon tavern coffee urn	612
Coffee pots by American silversmiths	613
Twentieth-century American coffee service	613
Turkish coffee set, Peter collection	614
Oldest coffee grinder	616
Grain mill used by Greeks and Romans	616
First coffee roaster	616
First cylinder roaster, 1650	616
Historical relics, U. S. National Museum	617
Turkish coffee mill	618
Early French wall and table grinders	618
Bronze and brass mortars, 17th century	619
Early American coffee roasters	619
Roaster with three-sided hood	620
Roasting, making, and serving devices, 17th century	620
English and French coffee grinders	621
Eighteenth-century roaster	621
Original French drip pot	621
Belgian, Russian, and French pewter pots	622
17th and 18th century pewter pots	623
Count Rumford's percolator	623
Drawings of early French coffee makers	624
Early French filtration devices	624
Early American coffee-maker patents	625
French coffee makers, 19th century	625
First English commercial roaster patent	626
Early French coffee-roasting machines	627
Battery of Carter pull-out machines	628
Early English and American roasters	630
Early English and American coffee-making devices	632
Dakin roasting machine of 1848	633
Globe stove roaster of 1860	634
Hyde's combined roaster and stove	634
Original Burns roaster, 1864	635
Burns granulating mill, 1872-74	636
Napier's vacuum machine	637
German gas and coal roasting machines	638
Other German coffee roasters	639
Original Enterprise mill	640
Max Thürmer's quick gas roaster	640
An English gas coffee-roasting plant	641
French globular roaster	642
Sirocco machine (French)	642
English roasting and grinding equipment	643
Magic gas machine (French)	644
Burns Jubilee gas machine	644
Double gas roasting outfit (French)	645
Lambert's Victory gas machine	646
One of the first electric mills	647
English electric-fuel roaster	648
Ben Franklin electric coffee roaster	648
Enterprise hand store mill	649
Latest types electric store mills	650
Italian rapid coffee-making machines	651
Working of Italian rapid machines	652
La Victoria Arduino Mignonne	652
N. C. R. A. Home coffee mill	653
Manthey-Zorn rapid infuser and dispenser	653
Tricolette, single-cup filter device	654
Moorish coffee house in Algiers	656
Coffee house in Cairo	656
Coffee service in Cairo barber shop	657
Coffee-laden camels, Arabia	658
Arabian coffee house	658
Mahommedan brewing coffee for guest	659
Native café, Harar	661
Early coffee, tea, and chocolate service	661
Nubian slave girl with coffee service	662
Persian coffee service, 1737	663
In a Turkish coffee house	664
Roasting coffee outside a Turkish café	664
Turkish caffinet, early 19th century	665
Coffee-making in Turkey	666
Street coffee vender in the Levant	666
A coffee house in Syria	667
Cafetan—garb of oriental café-keeper	668
Street coffee service in Constantinople	668
Riverside café in Damascus	669
Coffee *al fresco* in Jerusalem	671
Café Schrangl, Vienna	672
Favorite English way of making coffee	673
A café of Ye Mecca Company, London	673
Groom's coffee house, London	674

ILLUSTRATIONS

	Page
Café Monico, Picadilly Circus, London	674
Gatti's, The Strand, London	675
Tea lounge, Hotel Savoy, London	675
Two popular places for coffee in London	676
Temple Bar restaurant, London	677
Tea balcony, Hotel Cecil, London	677
One of Slater's chain-shops, London	677
St. James's restaurant, Picadilly, London	678
An A. B. C. shop, London	678
Halt of caravaners at a serai, Bulgaria	678
Café de la Paix, Paris	679
Sidewalk annex, Café de la Paix	680
Café de la Régence, Paris	681
Café de la Régence in 1922	682
One of the Biard cafés, Paris	688
Restaurant Procope, 1922	683
Morning coffee at a Boulevard café	684
Café Bauer, Unter den Linden, Berlin	684
Café Bauer, exterior	685
Kranzler's Unter den Linden, Berlin	685
Swedish coffee boilers	687
Sidewalk café, Lisbon	687
Coffee rooms replacing hotel bars, U. S.	688
Britannia coffee pot—a Lincoln relic	690
Coffee service, Hotel Astor, New York	691
Early coffee making in Persia	694
Napier vacuum coffee maker	700
Napier-List steam coffee machine	700
Finley Acker's filter-paper coffee pot	700
Kin-Hee pot in operation	701
Tricolator in operation	701
King percolator	701
Three American coffee-making machines in operation	702
How the Tru-Bru pot operates	702
Coffee-making devices used in U. S	703
English hotel coffee-making machines	706
Well-known makes of large coffee urns	707
Popular German drip pot	708
Section of roasted bean, magnified	719
Cross-section of roasted bean, magnified	720
Coarse grind under the microscope	720
Medium grind under the microscope	721
Fine-meal grind under the microscope	721

Portraits

	Page
Ach, F. J.	447, 512
Akers, Fred	495
Ames, Allan P.	447
Arbuckle, John	523
Arnold, Benjamin Greene	476, 517
Arnold, F. B.	476
Bayne, William	479
Bayne, William, Jr.	447
Beard, Eli	493
Beard, Samuel	493
Bennett, William H.	479
Bickford, C. E.	478
Boardman, Thomas J.	500
Boardman, William	500
Brand, Carl W.	512
Brandenstein, M. J.	504
Burns, Jabez	527
Canby, Edward	500
Casanas, Ben C.	512
Cauchois, F. A.	493
Chase, Caleb	500
Cheek, J. O.	504, 515
Closset, Joseph	504
Coste, Felix	447
Crossman, Geo. W.	479
Devers, A. H.	504
Dwinell, James F.	500
Eppens, Fred	495
Eppens, Julius A.	495, 497
Eppens, W. H.	493, 495
Evans, David G.	504
Fischer, Benedickt	493
Flint, J. G.	500
Folger, J. A., Jr.	504
Folger, J. A., Sr.	504
Forbes, A. E.	504
Forbes, Jas. H.	504
Geiger, Frank J.	500
Gillies, Jas. W.	493
Gillies, Wright	493
Grossman, William	500
Harrison, D. Y.	500
Harrison, W. H.	500
Haulenbeek, Peter	493
Hayward, Martin	500
Heekin, James	500
Jones, W. T.	504
Kimball, O. G.	478
Kinsella, W. J.	504
Kirkland, Alexander	495
Kolschitzky, Franz George	50
McLaughlin, W. F.	500
Mahood, Samuel	500
Mayo, Henry	495
Meehan, P. C.	477
Menezes, Th. Langgaard de	446
Meyer, Robert	511
Peck, Edwin H.	477
Phyfe, Jas. W.	478
Pierce, O. W., Sr.	500

ILLUSTRATIONS

	Page
Pupke, John F.	495
Purcell, Joseph	476
Reid, Fred	495
Reid, Thomas	493, 495
Roome, Col. William P.	499
Russell, James C.	478
Sanborn, James S.	500
Schilling, A.	504
Schotten, Julius J.	504, 512
Schotten, William	504
Seelye, Frank R.	512
Sielcken, Hermann	476, 519
Simmonds, H.	477
Sinnott, J. B.	504
Smith, L. B.	493
Smith, M. E.	504
Sprague, Albert A.	500
Stephens, Henry A.	500
Stoffregen, Charles	504
Stoffregen, C. H.	447
Taylor, James H.	477
Thomson, A. M.	500
Van Loan, Thomas	498
Weir, Ross W.	447, 512
Westfeldt, George	479
Widlar, Francis	500
Wilde, Samuel	493
Withington, Elijah	493
Woolson, Alvin M.	500
Wright, George C.	500
Wright, George S.	447
Young, Samuel	500
Zinsmeister, J.	504

Maps, Charts, and Diagrams

	Page
Map of London coffee-house district, 1748	76
Formula for Caffein	160
Commercial coffee chart	191
Eiffel and Woolworth towers in coffee	272
World's coffee cup and largest ship	275
Coffee exports, 1850-1920	277
Coffee exports, 1916-1920	277
Brazil coffee exports, 1850-1920	278
World's coffee consumption, 1850-1920	286
Coffee imports, 1916-1920	286
World trend of consumption of tea and coffee, 1860-1920	288
Coffee map of World (folded insert) *facing*	288
Pre-war annual average production of coffee by continents	294
Pre-war annual average production of coffee by countries	294
Pre-war average annual imports of coffee into U. S. by continents	295
Pre-war average annual imports of coffee into U. S. by countries	295
Pre-war coffee-imports chart	297
Pre-war consumption and price chart	297
Coffee map, Brazil	342
Coffee map, São Paulo, Minas, and Rio	344
Mild-coffee map, 1	346
Coffee map, Africa and Arabia	352
Mild-coffee map, 2	354
Complete reference table (21 pp.)	358
Plan of milling-machine connections	381
Plan of green-coffee-mixer connections	383
Layout for coffee and tea department	418
Chart, advertising of coffee and coffee substitutes, 1911-20	440
Charts, per capita consumption of coffee, and coffee and substitute advertising	441
Chart, plan of advertising campaign	448
Chart, private-brand advertising, 1921	458

A COFFEE THESAURUS

Encomiums and descriptive phrases applied to the plant, the berry, and the beverage

The Plant

The precious plant
This friendly plant
Mocha's happy tree
The gift of Heaven
The plant with the jessamine-like flowers
The most exquisite perfume of Araby the blest
Given to the human race by the gift of the Gods

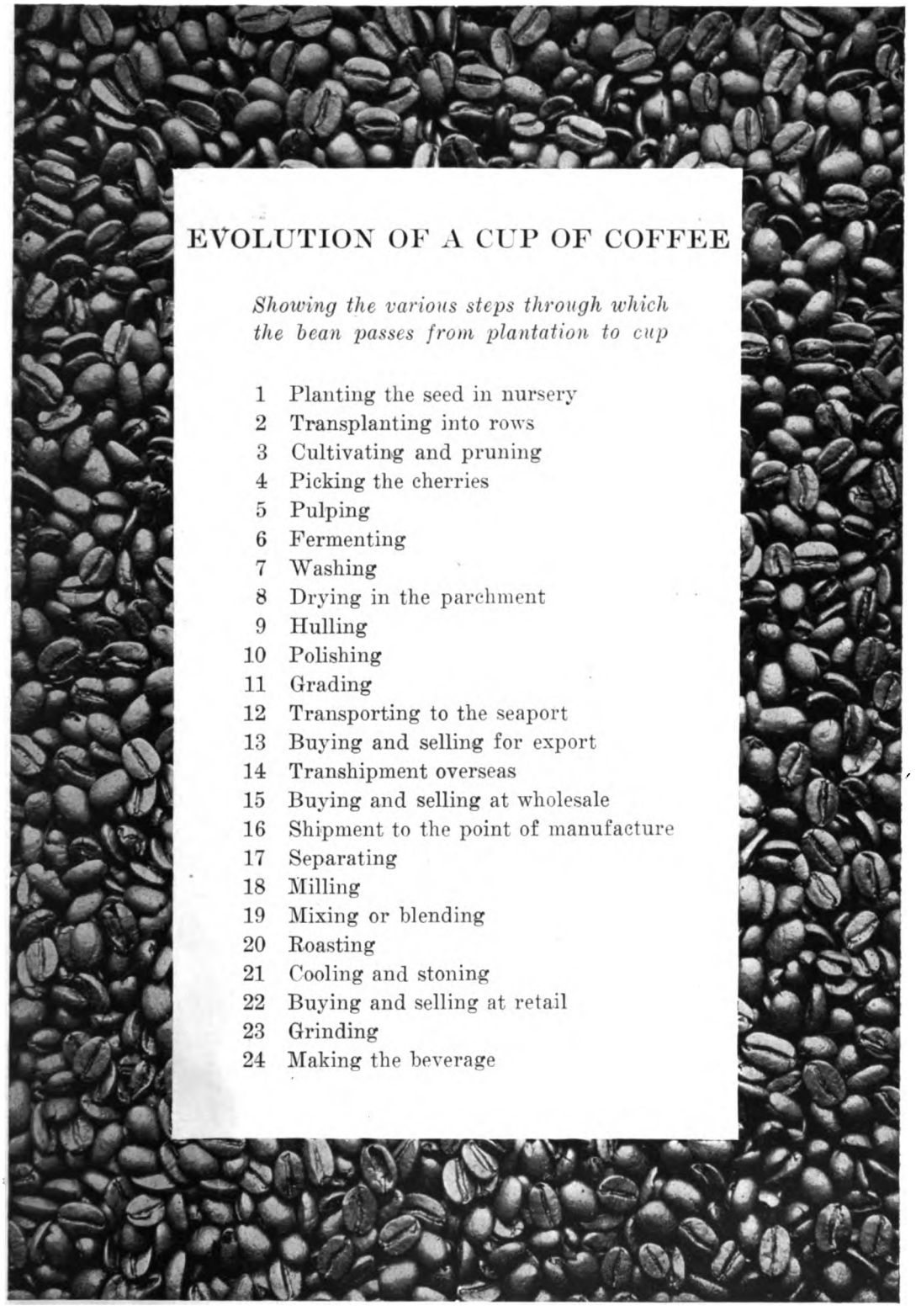
The Berry

The magic bean
The divine fruit
Fragrant berries
Rich, royal berry
Voluptuous berry
The precious berry
The healthful bean
The Heavenly berry
The marvelous berry
This all-healing berry
Yemen's fragrant berry
The little aromatic berry
Little brown Arabian berry
Thought-inspiring bean of Arabia
The smoking, ardent beans Aleppo sends
That wild fruit which gives so beloved a drink

The Beverage

Nepenthe
Festive cup
Juice divine
Nectar divine
Ruddy mocha
A man's drink
Lovable liquor
Delicious mocha
The magic drink
This rich cordial
Its stream divine
The family drink
The festive drink
Coffee is our gold
Nectar of all men
The golden mocha
This sweet nectar
Celestial ambrosia
The friendly drink
The cheerful drink
The essential drink
The sweet draught
The divine draught
The grateful liquor
The universal drink
The American drink
The amber beverage
The convivial drink
The universal thrill
King of all perfumes
The cup of happiness
The soothing draught
Ambrosia of the Gods
The intellectual drink
The aromatic draught
The salutary beverage
The good-fellow drink
The drink of democracy
The drink ever glorious
Wakeful and civil drink
The beverage of sobriety
A psychological necessity
The fighting man's drink
Loved and favored drink
The symbol of hospitality
This rare Arabian cordial
Inspirer of men of letters
The revolutionary beverage
Triumphant stream of sable
Grave and wholesome liquor
The drink of the intellectuals
A restorative of sparkling wit
Its color is the seal of its purity
The sober and wholesome drink
Lovelier than a thousand kisses
This honest and cheering beverage
A wine which no sorrow can resist
The symbol of human brotherhood
At once a pleasure and a medicine
The beverage of the friends of God
The fire which consumes our griefs
Gentle panacea of domestic troubles
The autocrat of the breakfast table
The beverage of the children of God
King of the American breakfast table
Soothes you softly out of dull sobriety
The cup that cheers but not inebriates*
Coffee, which makes the politician wise
Its aroma is the pleasantest in all nature
The sovereign drink of pleasure and health*
The indispensable beverage of strong nations
The stream in which we wash away our sorrows
The enchanting perfume that a zephyr has brought
Favored liquid which fills all my soul with delight
The delicious libation we pour on the altar of friendship
This invigorating drink which drives sad care from the heart

* First written about tea; improperly claimed to have been written of coffee.



EVOLUTION OF A CUP OF COFFEE

Showing the various steps through which the bean passes from plantation to cup

1 Planting the seed in nursery
2 Transplanting into rows
3 Cultivating and pruning
4 Picking the cherries
5 Pulping
6 Fermenting
7 Washing
8 Drying in the parchment
9 Hulling
10 Polishing
11 Grading
12 Transporting to the seaport
13 Buying and selling for export
14 Transhipment overseas
15 Buying and selling at wholesale
16 Shipment to the point of manufacture
17 Separating
18 Milling
19 Mixing or blending
20 Roasting
21 Cooling and stoning
22 Buying and selling at retail
23 Grinding
24 Making the beverage

COFFEE ARABICA; LEAVES, FLOWERS AND FRUIT

Painted from nature by M. E. Eaton — Detail sketches show anther, pistil, and section of corolla

CHAPTER I

DEALING WITH THE ETYMOLOGY OF COFFEE

Origin and translation of the word from the Arabian into various languages—Views of many writers

THE history of the word coffee involves several phonetic difficulties. The European languages got the name of the beverage about 1600 from the original Arabic قهوة *qahwah,* not directly, but through its Turkish form, *kahveh.* This was the name, not of the plant, but the beverage made from its infusion, being originally one of the names employed for wine in Arabic.

Sir James Murray, in the *New English Dictionary,* says that some have conjectured that the word is a foreign, perhaps African, word disguised, and have thought it connected with the name Kaffa, a town in Shoa, southwest Abyssinia, reputed native place of the coffee plant, but that of this there is no evidence, and the name *qahwah* is not given to the berry or plant, which is called بن *bunn,* the native name in Shoa being *bŭn.*

Contributing to a symposium on the etymology of the word coffee in *Notes and Queries,* 1909, James Platt, Jr., said:

> The Turkish form might have been written *kahvé,* as its final *h* was never sounded at any time. Sir James Murray draws attention to the existence of two European types, one like the French *café,* Italian *caffè,* the other like the English *coffee,* Dutch *koffie.* He explains the vowel *o* in the second series as apparently representing *au,* from Turkish *ahv.* This seems unsupported by evidence, and the *v* is already represented by the *ff,* so on Sir James's assumption *coffee* must stand for *kahv-ve,* which is unlikely. The change from *a* to *o,* in my opinion, is better accounted for as an imperfect appreciation. The exact sound of *ă* in Arabic and other Oriental languages is that of the English short *u,* as in "cuff." This sound, so easy to us, is a great stumbling-block to other nations. I judge that Dutch *koffie* and kindred forms are imperfect attempts at the notation of a vowel which the writers could not grasp. It is clear that the French type is more correct. The Germans have corrected their *koffee,* which they may have got from the Dutch, into *kaffee.* The Scandinavian languages have adopted the French form. Many must wonder how the *hv* of the original so persistently becomes *ff* in the European equivalents. Sir James Murray makes no attempt to solve this problem.

Virendranath Chattopádhyáya, who also contributed to the *Notes and Queries* symposium, argued that the *hw* of the Arabic *qahwah* becomes sometimes *ff* and sometimes only *f* or *v* in European translations because some languages, such as English, have strong syllabic accents (stresses), while others, as French, have none. Again, he points out that the surd aspirate *h* is heard in some languages, but is hardly audible in others. Most Europeans tend to leave it out altogether.

Col. W. F. Prideaux, another contributor, argued that the European languages got one form of the word coffee directly from the Arabic *qahwah,* and quoted from Hobson-Jobson in support of this:

> *Chaoua* in 1598, *Cahoa* in 1610, *Cahue* in 1615; while Sir Thomas Herbert (1638) expressly states that "they drink (in Persia) * * * above all the rest, *Coho* or *Copha:* by Turk and Arab called *Caphe* and *Cahua.*" Here the Persian, Turkish, and Arabic pronunciations are clearly differentiated.

Col. Prideaux then calls, as a witness to the Anglo-Arabic pronunciation, one whose evidence was not available when the *New English Dictionary* and Hobson-Jobson articles were written. This is John Jourdain, a Dorsetshire seaman, whose *Diary* was printed by the Hakluyt Society in 1905. On May 28, 1609, he records that "in the

afternoone wee departed out of Hatch (Al-Hauta, the capital of the Lahej district near Aden), and travelled untill three in the morninge, and then wee rested in the plaine fields untill three the next daie, neere unto a cohoo howse in the desert." On June 5 the party, traveling from Hippa (Ibb), "laye in the mountaynes, our camells being wearie, and our selves little better. This mountain is called Nasmarde (Nakīl Sumāra), where all the cohoo grows." Farther on was "a little village, where there is sold cohoo and fruite. The seeds of this cohoo is a greate marchandize, for it is carried to grand Cairo and all other places of Turkey, and to the Indias." Prideaux, however, mentions that another sailor, William Revett, in his journal (1609) says, referring to Mocha, that "Shaomer Shadli (Shaikh 'Ali bin 'Omar esh-Shādil) was the fyrst inventour for drynking of coffe, and therefor had in esteemation." This rather looks to Prideaux as if on the coast of Arabia, and in the mercantile towns, the Persian pronunciation was in vogue; whilst in the interior, where Jourdain traveled, the Englishman reproduced the Arabic.

Mr. Chattopádhyáya, discussing Col. Prideaux's views as expressed above, said:

> Col. Prideaux may doubt "if the worthy mariner, in entering the word in his log, was influenced by the abstruse principles of phonetics enunciated" by me, but he will admit that the change from *kahvah* to *coffee* is a phonetic change, and must be due to the operation of some phonetic principle. The average man, when he endeavours to write a foreign word in his own tongue, is handicapped considerably by his inherited and acquired phonetic capacity. And, in fact, if we take the quotations made in "Hobson-Jobson," and classify the various forms of the word *coffee* according to the nationality of the writer, we obtain very interesting results.
>
> Let us take Englishmen and Dutchmen first. In Danvers's *Letters* (1611) we have both "*coho* pots" and "*coffao* pots"; Sir T. Roe (1615) and Terry (1616) have *cohu;* Sir T. Herbert (1638) has *coho* and *copha;* Evelyn (1637), *coffee;* Fryer (1673) *coho;* Ovington (1690), *coffee;* and Valentijn (1726), *coffi.* And from the two examples given by Col. Prideaux, we see that Jourdain (1609) has *cohoo,* and Revett (1609) has *coffe.*

To the above should be added the following by English writers, given in Foster's *English Factories in India* (1618 - 21, 1622 - 23, 1624 - 29): cowha (1619), cowhe, couha (1621), coffa (1628).

Let us now see what foreigners (chiefly French and Italian) write. The earliest European mention is by Rauwolf, who knew it in Aleppo in 1573. He has the form *chaube.* Prospero Alpini (1580) has *caova;* Paludanus (1598) *chaoua;* Pyrard de Laval (1610) *cahoa;* P. Della Valle (1615) *cahue;* Jac. Bontius (1631) *caveah;* and the *Journal d'Antoine Galland* (1673) *cave.* That is, Englishmen use forms of a certain distinct type, *viz.,* cohu, coho, coffao, coffe, copha, coffee, which differ from the more correct transliteration of foreigners.

In 1610 the Portuguese Jew, Pedro Teixeira (in the Hakluyt Society's edition of his *Travels*) used the word *kavàh.*

The inferences from these transitional forms seem to be: 1. The word found its way into the languages of Europe both from the Turkish and from the Arabic. 2. The English forms (which have strong stress on the first syllable) have *ŏ* instead of *ă,* and *f* instead of *h.* 3. The foreign forms are unstressed and have no *h.* The original *v* or *w* (or labialized *u*) is retained or changed into *f.*

It may be stated, accordingly, that the chief reason for the existence of two distinct types of spelling is the omission of *h* in unstressed languages, and the conversion of *h* into *f* under strong stress in stressed languages. Such conversion often takes place in Turkish; for example, *silah dar* in Persian (which is a highly stressed language) becomes *zilif dar* in Turkish. In the languages of India, on the other hand, in spite of the fact that the aspirate is usually very clearly sounded, the word *qăhvăh* is pronounced *kaiva* by the less educated classes, owing to the syllables being equally stressed.

Now for the French viewpoint. Jardin[1] opines that, as regards the etymology of the word coffee, scholars are not agreed and perhaps never will be. Dufour[2] says the word is derived from *caouhe,* a name given by the Turks to the beverage prepared from the seed. Chevalier d'Arvieux, French consul at Alet, Savary, and Trevoux, in his dictionary, think that coffee comes from the Arabic, but from the word *cahoueh* or *quaweh,* meaning to give vigor or strength, because, says d'Arvieux, its most general effect is to fortify and strengthen. Tavernier combats this opinion. Moseley attributes the origin of the word coffee to Kaffa. Sylvestre de Sacy, in his *Chrestomathie*

[1] Jardin, Edelestan. *Le Caféier et le Café.* Paris, 1895 (p. 55).

[2] Dufour, Philippe Sylvestre. *Traitès Nouveaux et Curieux du Café, du Thé, et du Chocolat.* Lyons, 1684.

Arabe, published in 1806, thinks that the word *kahwa*, synonymous with *makli*, roasted in a stove, might very well be the etymology of the word coffee. D'Alembert in his encyclopedic dictionary, writes the word *caffé*. Jardin concludes that whatever there may be in these various etymologies, it remains a fact that the word coffee comes from an Arabian word, whether it be *kahua, kahoueh, kaffa* or *kahwa*, and that the peoples who have adopted the drink have all modified the Arabian word to suit their pronunciation. This is shown by giving the word as written in various modern languages:

French, *café;* Breton, *kafe;* German, *kaffee* (coffee tree, *kaffeebaum*); Dutch, *koffie* (coffee tree, *koffieboonen*); Danish, *kaffe;* Finnish, *kahvi;* Hungarian, *kavé;* Bohemian, *kava;* Polish, *kawa;* Roumanian, *cafea;* Croatian, *kafa;* Servian, *kava;* Russian, *kophe;* Swedish, *kaffe;* Spanish, *café;* Basque, *kaffia;* Italian, *caffè;* Portuguese, *café;* Latin (scientific), *coffea;* Turkish, *kahué;* Greek, *kaféo;* Arabic, *qahwah* (coffee berry, *bun*); Persian, *qéhvé* (coffee berry, *bun*[3]); Annamite, *ca-phé;* Cambodian, *kafé;* Dukni[4], *bunbund*[5]; Teluyan[4], *kapri-vittulu;* Tamil[4], *kapi-kottai* or *kopi;* Canareze[4], *kapi-bija;* Chinese, *kia-fey, teoutsé;* Japanese, *kéhi;* Malayan, *kawa, koppi;* Abyssinian, *bonn*[6]; Foulak, *legal café*[7]; Sousou, *houri caff*[7]; Marquesan, *kapi;* Chinook[8], *kaufee;* Volapuk, *kaf;* Esperanto, *kafva.*

[3]Coffee covered with the skin is called *boun*, and the coffee-tree, *boun*-tree (*sejar et boun*).

[4]These four dialects are spoken in Hindustan.

[5]Notice must be taken of the similarity in the names of coffee in Hindustan and Abyssinia, and of the name of the coffee-tree as given by ancient authors.

[6]See note 3 above.

[7]*Legal* and *Houri* mean tree.

[8]North-American Indian.

THE FAIRY BEAUTY OF A COFFEE TREE IN FLOWER

CHAPTER II

HISTORY OF COFFEE PROPAGATION

A brief account of the cultivation of the coffee plant in the Old World and its introduction into the New—A romantic coffee adventure

THE history of the propagation of the coffee plant is closely interwoven with that of the early history of coffee drinking, but for the purposes of this chapter we shall consider only the story of the inception and growth of the cultivation of the coffee tree, or shrub, bearing the seeds, or berries, from which the drink, coffee, is made.

Careful research discloses that most authorities agree that the coffee plant is indigenous to Abyssinia, and probably Arabia, whence its cultivation spread throughout the tropics. The first reliable mention of the properties and uses of the plant is by an Arabian physician toward the close of the ninth century A. D., and it is reasonable to suppose that before that time the plant was found growing wild in Abyssinia and perhaps in Arabia. If it be true, as Ludolphus writes,[1] that the Abyssinians came out of Arabia into Ethiopia in the early ages, it is possible that they may have brought the coffee tree with them; but the Arabians must still be given the credit for discovering and promoting the use of the beverage, and also for promoting the propagation of the plant, even if they found it in Abyssinia and brought it to Yemen.

Some authorities believe that the first cultivation of coffee in Yemen dates back to 575 A. D., when the Persian invasion put an end to the Ethiopian rule of the negus Caleb, who conquered the country in 525.

Certainly the discovery of the beverage resulted in the cultivation of the plant in Abyssinia and in Arabia; but its progress was slow until the 15th and 16th centuries, when it appears as intensively carried on in the Yemen district of Arabia. The Arabians were jealous of their new found and lucrative industry, and for a time successfully prevented its spread to other countries by not permitting any of the precious berries to leave the country unless they had first been steeped in boiling water or parched, so as to destroy their powers of germination. It may be that many of the early failures successfully to introduce the cultivation of the coffee plant into other lands was also due to the fact, discovered later, that the seeds soon lose their germinating power.

However, it was not possible to watch every avenue of transport, with thousands of pilgrims journeying to and from Mecca every year; and so there would appear to be some reason to credit the Indian tradition concerning the introduction of coffee cultivation into southern India by Baba Budan, a Moslem pilgrim, as early as 1600, although a better authority gives the date as 1695. Indian tradition relates that Baba Budan planted his seeds near the hut he built for himself at Chickmaglur in the mountains of Mysore, where, only a few years since, the writer found the descendants of these first plants growing under the shade of the centuries-old original jungle trees. The greater part of the plants cultivated by the natives of Kurg and Mysore appear to have come from the Baba Budan importation. It was not until 1840 that the English began the cultivation of coffee in India. The plantations extend now from the extreme north of Mysore to Tuticorin.

Early Cultivation by the Dutch

In the latter part of the 16th century, German, Italian, and Dutch botanists and

[1] La Roque, Jean. *Voyage de l'Arabie Heureuse.* Paris, 1716.

travelers brought back from the Levant considerable information regarding the new plant and the beverage. In 1614 enterprising Dutch traders began to examine into the possibilities of coffee cultivation and coffee trading. In 1616 a coffee plant was successfully transported from Mocha to Holland. In 1658 the Dutch started the cultivation of coffee in Ceylon, although the Arabs are said to have brought the plant to the island prior to 1505. In 1670 an attempt was made to cultivate coffee on European soil at Dijon, France, but the result was a failure.

In 1696, at the instigation of Nicolaas Witsen, then burgomaster of Amsterdam, Adrian Van Ommen, commander at Malabar, India, caused to be shipped from Kananur, Malabar, to Java, the first coffee plants introduced into that island. They were grown from seed of the *Coffea arabica* brought to Malabar from Arabia. They were planted by Governor-General Willem Van Outshoorn on the Kedawoeng estate near Batavia, but were subsequently lost by earthquake and flood. In 1699 Henricus Zwaardecroon imported some slips, or cuttings, of coffee trees from Malabar into Java. These were more successful, and became the progenitors of all the coffees of the Dutch East Indies. The Dutch were then taking the lead in the propagation of the coffee plant.

In 1706 the first samples of Java coffee, and a coffee plant grown in Java, were received at the Amsterdam botanical gardens. Many plants were afterward propagated from the seeds produced in the Amsterdam gardens, and these were distributed to some of the best known botanical gardens and private conservatories in Europe.

While the Dutch were extending the cultivation of the plant to Sumatra, the Celebes, Timor, Bali, and other islands of the Netherlands Indies, the French were seeking to introduce coffee cultivation into their colonies. Several attempts were made to transfer young plants from the Amsterdam botanical gardens to the botanical gardens at Paris; but all were failures.

In 1714, however, as a result of negotiations entered into between the French government and the municipality of Amsterdam, a young and vigorous plant about five feet tall was sent to Louis XIV at the chateau of Marly by the burgomaster of Amsterdam. The day following, it was transferred to the Jardin des Plantes at Paris, where it was received with appropriate ceremonies by Antoine de Jussieu, professor of botany in charge. This tree was destined to be the progenitor of most of the coffees of the French colonies, as well as of those of South America, Central America, and Mexico.

The Romance of Captain Gabriel de Clieu

Two unsuccessful attempts were made to transport to the Antilles plants grown from the seed of the tree presented to Louis XIV; but the honor of eventual success was won by a young Norman gentleman, Gabriel Mathieu de Clieu, a naval officer, serving at the time as captain of infantry at Martinique. The story of de Clieu's achievement is the most romantic chapter in the history of the propagation of the coffee plant.

His personal affairs calling him to France, de Clieu conceived the idea of utilizing the return voyage to introduce coffee cultivation into Martinique. His first difficulty lay in obtaining several of the plants then being cultivated in Paris, a difficulty at last overcome through the instrumentality of M. de Chirac, royal physician, or, according to a letter written by de Clieu himself, through the kindly offices of a lady of quality to whom de Chirac could give no refusal. The plants selected were kept at Rochefort by M. Bégon, commissary of the department, until the departure of de Clieu for Martinique. Concerning the exact date of de Clieu's arrival at Martinique with the coffee plant, or plants, there is much conflict of opinion. Some authorities give the date as 1720, others 1723. Jardin[2] suggests that the discrepancy in dates may arise from de Clieu, with praiseworthy perseverance, having made the voyage twice. The first time, according to Jardin, the plants perished; but the second time de Clieu had planted the seeds when leaving France and these survived, "due, they say, to his having given of his scanty ration of water to moisten them." No reference to a preceding voyage, however, is made by de Clieu in his own account, given in a letter written to the *Année Littéraire*[3] in 1774. There is also a difference of opinion as to whether de Clieu arrived with one or three plants. He himself says "one" in the letter referred to.

According to the most trustworthy data, de Clieu embarked at Nantes, 1723.[4] He

[2]Jardin, Edelestan. *Le Caféier et le Café.* Paris, 1895 (p. 102).
[3]*Année Littéraire.* Paris, 1774 (vol. vi: p. 217).
[4]Franklin, Alfred. *La Vie Privée d'Autrefois.* Paris, 1893.

had installed his precious plant in a box covered with a glass frame in order to absorb the rays of the sun and thus better to retain the stored-up heat for cloudy days. Among the passengers one man, envious of the young officer, did all in his power to wrest from him the glory of success. Fortunately his dastardly attempt failed of its intended effect.

"It is useless," writes de Clieu in his letter to the *Année Littéraire*, "to recount

CAPTAIN DE CLIEU SHARES HIS DRINKING WATER WITH THE COFFEE PLANT HE IS CARRYING TO MARTINIQUE

in detail the infinite care that I was obliged to bestow upon this delicate plant during a long voyage, and the difficulties I had in saving it from the hands of a man who, basely jealous of the joy I was about to taste through being of service to my country, and being unable to get this coffee plant away from me, tore off a branch."

The vessel carrying de Clieu was a merchantman, and many were the trials that beset passengers and crew. Narrowly escaping capture by a corsair of Tunis, menaced by a violent tempest that threatened to annihilate them, they finally encountered a calm that proved more appalling than either. The supply of drinking water was well nigh exhausted, and what was left was rationed for the remainder of the voyage.

"Water was lacking to such an extent," says de Clieu, "that for more than a month I was obliged to share the scanty ration of it assigned to me with this my coffee plant upon which my happiest hopes were founded and which was the source of my delight. It needed such succor the more in that it was extremely backward, being no larger than the slip of a pink." Many stories have been written and verses sung recording and glorifying this generous sacrifice that has given luster to the name of de Clieu.

Arrived in Martinique, de Clieu planted his precious slip on his estate in Prêcheur, one of the cantons of the island; where, says Raynal, "it multiplied with extraordinary rapidity and success." From the seedlings of this plant came most of the coffee trees of the Antilles. The first harvest was gathered in 1726.

De Clieu himself describes his arrival as follows:

> Arriving at home, my first care was to set out my plant with great attention in the part of my garden most favorable to its growth. Although keeping it in view, I feared many times that it would be taken from me; and I was at last obliged to surround it with thorn bushes and to establish a guard about it until it arrived at maturity . . . this precious plant which had become still more dear to me for the dangers it had run and the cares it had cost me.

Thus the little stranger thrived in a distant land, guarded day and night by faithful slaves. So tiny a plant to produce in the end all the rich estates of the West India islands and the regions bordering on the Gulf of Mexico! What luxuries, what future comforts and delights, resulted from this one small talent confided to the care of a man of rare vision and fine intellectual sympathy, fired by the spirit of real love for his fellows! There is no instance in the history of the French people of a good deed done by stealth being of greater service to humanity.

De Clieu thus describes the events that followed fast upon the introduction of

coffee into Martinique, with particular reference to the earthquake of 1727:

Success exceeded my hopes. I gathered about two pounds of seed which I distributed among all those whom I thought most capable of giving the plants the care necessary to their prosperity. The first harvest was very abundant; with the second it was possible to extend the cultivation prodigiously, but what favored multiplication, most singularly, was the fact that two years afterward all the cocoa trees of the country, which were the resource and occupation of the people, were uprooted and totally destroyed by horrible tempests accompanied by an inundation which submerged all the land where these trees were planted, land which was at once made into coffee plantations by the natives. These did marvelously and enabled us to send plants to Santo Domingo, Guadeloupe, and other adjacent islands, where since that time they have been cultivated with the greatest success.

By 1777 there were 18,791,680 coffee trees in Martinique.

De Clieu was born in Angléqueville-sur-Saane, Seine-Inférieure (Normandy), in 1686 or 1688.[8] In 1705 he was a ship's ensign; in 1718 he became a chevalier of St. Louis; in 1720 he was made a captain of infantry; in 1726, a major of infantry; in 1733 he was a ship's lieutenant; in 1737 he became governor of Guadeloupe; in 1746 he was a ship' captain; in 1750 he was made honorary commander of the order of St. Louis; in 1752 he retired with a pension of 6000 francs; in 1753 he re-entered the naval service; in 1760 he again retired with a pension of 2000 francs.

In 1746 de Clieu, having returned to France, was presented to Louis XV by the minister of marine, Rouillé de Jour, as "a distinguished officer to whom the colonies, as well as France itself, and commerce generally, are indebted for the cultivation of coffee."

Reports to the king in 1752 and 1759 recall his having carried the first coffee plant to Martinique, and that he had ever been distinguished for his zeal and disinterestedness. In the *Mercure de France,* December, 1774, was the following death notice:

Gabriel d'Erchigny de Clieu, former Ship's Captain and Honorary Commander of the Royal and Military Order of Saint Louis, died in Paris on the 30th of November in the 88th year of his age.

A notice of his death appeared also in the *Gazette de France* for December 5, 1774, a rare honor in both cases; and it has been said that at this time his praise was again on every lip.

[8]Michaud, I. F. and L. G. *Biographie Universelle.* Paris.

One French historian, Sidney Daney,[9] records that de Clieu died in poverty at St. Pierre at the age of 97; but this must be an error, although it does not anywhere appear that at his death he was possessed of much, if any, means. Daney says:

This generous man received as his sole recompense for a noble deed the satisfaction of seeing this plant for whose preservation he had shown such devotion, prosper throughout the Antilles. The illustrious de Clieu is among those to whom Martinique owes a brilliant reparation.

Daney tells also that in 1804 there was a movement in Martinique to erect a monument upon the spot where de Clieu planted his first coffee plant, but that the undertaking came to naught.

Pardon, in his *La Martinique* says:

Honor to this brave man! He has deserved it from the people of two hemispheres. His name is worthy of a place beside that of Parmentier who carried to France the potato of Canada. These two men have rendered immense service to humanity, and their memory should never be forgotten — yet alas! Are they even remembered?

Tussac, in his *Flora de las Antillas,* writing of de Clieu, says, "Though no monument be erected to this beneficent traveler, yet his name should remain engraved in the heart of every colonist."

In 1774 the *Année Littéraire* published a long poem in de Clieu's honor. In the feuilleton of the *Gazette de France,* April 12, 1816, we read that M. Donns, a wealthy Hollander, and a coffee connoisseur, sought to honor de Clieu by having painted upon a porcelain service all the details of his voyage and its happy results. "I have seen the cups," says the writer, who gives many details and the Latin inscription.

That singer of navigation, Esménard, has pictured de Clieu's devotion in the following lines:

Forget not how de Clieu with his light vessel's sail,
Brought distant Moka's gift — that timid plant and frail.
The waves fell suddenly, young zephyrs breathed no more,
Beneath fierce Cancer's fires behold the fountain store,
Exhausted, fails; while now inexorable need
Makes her unpitying law — with measured dole obeyed.

Now each soul fears to prove Tantalus torment first.
De Clieu alone defies: While still that fatal thirst,
Fierce, stifling, day by day his noble strength devours,

[9]Daney, Sidney. *Histoire de la Martinique.* Fort Royal, 1846.

And still a heaven of brass inflames the burning hours.
With that refreshing draught his life he will not cheer;
But drop by drop revives the plant he holds more dear.
Already as in dreams, he sees great branches grow,
One look at his dear plant assuages all his woe.

The only memorial to de Clieu in Martinique is the botanical garden at Fort de France, which was opened in 1918 and dedicated to de Clieu, "whose memory has been too long left in oblivion."[1]

In 1715 coffee cultivation was first introduced into Haiti and Santo Domingo. Later came hardier plants from Martinique. In 1715 - 17 the French Company of the Indies introduced the cultivation of the plant into the Isle of Bourbon (now Réunion) by a ship captain named Dufougeret-Grenier from St. Malo. It did so well that nine years later the island began to export coffee.

The Dutch brought the cultivation of coffee to Surinam in 1718. The first coffee plantation in Brazil was started at Pará in 1723 with plants brought from French Guiana, but it was not a success. The English brought the plant to Jamaica in 1730. In 1740 Spanish missionaries introduced coffee cultivation into the Philippines from Java. In 1748 Don José Antonio Gelabert introduced coffee into Cuba, bringing the seed from Santo Domingo. In 1750 the Dutch extended the cultivation of the plant to the Celebes. Coffee was introduced into Guatemala about 1750 - 60. The intensive cultivation in Brazil dates from the efforts begun in the Portuguese colonies in Pará and Amazonas in 1752. Porto Rico began the cultivation of coffee about 1755. In 1760 João Alberto Castello Branco brought to Rio de Janeiro a coffee tree from Goa, Portuguese India. The news spread that the soil and climate of Brazil were particularly adapted to the cultivation of coffee. Molke, a Belgian monk, presented some seeds to the Capuchin monastery at Rio in 1774. Later, the bishop of Rio, Joachim Bruno, became a patron of the plant and encouraged its propagation in Rio, Minãs, Espirito Santo, and São Paulo. The Spanish voyager, Don Francisco Xavier Navarro, is credited with the introduction of coffee into Costa Rica from Cuba in 1779. In Venezuela the industry was started near Caracas by a priest, José Antonio Mohedano, with seed brought from Martinique in 1784.

Coffee cultivation in Mexico began in 1790, the seed being brought from the West Indies. In 1817 Don Juan Antonio Gomez instituted intensive cultivation in the State of Vera Cruz. In 1825 the cultivation of the plant was begun in the Hawaiian Islands with seeds from Rio de Janeiro. As previously noted, the English began to cultivate coffee in India in 1840. In 1852 coffee cultivation was begun in Salvador with plants brought from Cuba. In 1878 the English began the propagation of coffee in British Central Africa, but it was not until 1901 that coffee cultivation was introduced into British East Africa from Réunion. In 1887 the French introduced the plant into Tonkin, Indo-China. Coffee growing in Queensland, introduced in 1896, has been successful in a small way.

In recent years several attempts have been made to propagate the coffee plant in the southern United States, but without success. It is believed, however, that the topographic and climatic conditions in southern California are favorable for its cultivation.

[1] *Inauguration du Jardin Desclieux.* Fort de France, 1918.

OMAR AND THE MARVELOUS COFFEE BIRD

KALDI AND HIS DANCING GOATS

THE LEGENDARY DISCOVERY OF THE COFFEE DRINK

From drawings by a modern French artist

CHAPTER III

EARLY HISTORY OF COFFEE DRINKING

Coffee in the Near East in the early centuries — Stories of its origin — Discovery by physicians and adoption by the Church — Its spread through Arabia, Persia and Turkey — Persecutions and intolerances — Early coffee manners and customs

THE coffee drink had its rise in the classical period of Arabian medicine, which dates from Rhazes (Abu Bakr Muhammad ibn Zakariya El Razi) who followed the doctrines of Galen and sat at the feet of Hippocrates. Rhazes (850 - 922) was the first to treat medicine in an encyclopedic manner, and, according to some authorities, the first writer to mention coffee. He assumed the poetical name of Razi because he was a native of the city of Raj in Persian Irak. He was a great philosopher and astronomer, and at one time was superintendent of the hospital at Bagdad. He wrote many learned books on medicine and surgery, but his principal work is *Al-Haiwi*, or *The Continent*, a collection of everything relating to the cure of disease from Galen to his own time.

Philippe Sylvestre Dufour (1622 - 87)[1], a French coffee merchant, philosopher, and writer, in an accurate and finished treatise on coffee, tells us (see the early edition of the work translated from the Latin) that the first writer to mention the properties of the coffee bean under the name of *bunchum* was this same Rhazes, "in the ninth century after the birth of our Saviour"; from which (if true) it would appear that coffee has been known for upwards of 1000 years. Robinson[2], however, is of the opinion that *bunchum* meant something else and had nothing to do with coffee. Dufour, himself, in a later edition of his *Traitez Nouveaux et Curieux du Café* (the Hague, 1693) is inclined to admit that *bunchum* may have been a root and not coffee, after all; however, he is careful to add that there is no doubt that the Arabs knew coffee as far back as the year 800. Other, more modern authorities, place it as early as the sixth century.

Wiji Kawih is mentioned in a Kavi (Javan) inscription A. D. 856; and it is thought that the "bean broth" in David Tapperi's list of Javanese beverages (1667 - 82) may have been coffee[3].

While the true origin of coffee drinking may be forever hidden among the mysteries of the purple East, shrouded as it is in legend and fable, scholars have marshaled sufficient facts to prove that the beverage was known in Ethiopia "from time immemorial," and there is much to add verisimilitude to Dufour's narrative. This first coffee merchant-prince, skilled in languages and polite learning, considered that his character as a merchant was not inconsistent with that of an author; and he even went so far as to say there were some things (for instance, coffee) on which a merchant could be better informed than a philosopher.

Granting that by *bunchum* Rhazes meant coffee, the plant and the drink must have been known to his immediate followers; and this, indeed, seems to be indicated by similar references in the writings of Avicenna (Ibn Sina), the Mohammedan physician and philosopher, who lived from 980 to 1037 A. D.

[1]Dufour, Philippe Sylvestre. *Traitès Nouveaux et Curieux du Café, du Thé, et du Chocolat.* Lyons, 1684. (Title page has *Traitez;* elsewhere, *Traitès.*)

[2]Robinson, Edward Forbes. *The Early History of Coffee Houses in England.* London, 1893.

[3]*Encyclopedia Britannica.* 1910. (vol. xv: p. 291.)

Rhazes, in the quaint language of Dufour, assures us that "*bunchum* (coffee) is hot and dry and very good for the stomach." Avicenna explains the medicinal properties and uses of the coffee bean (*bon* or *bunn*), which he, also, calls *bunchum*, after this fashion:

As to the choice thereof, that of a lemon color, light, and of a good smell, is the best; the white and the heavy is naught. It is hot and dry in the first degree, and, according to others, cold in the first degree. It fortifies the members, it cleans the skin, and dries up the humidities that are under it, and gives an excellent smell to all the body.

The early Arabians called the bean and the tree that bore it, *bunn;* the drink, *bunchum*. A. Galland[4] (1646-1715), the French Orientalist who first analyzed and translated from the Arabic the Abd-al-Kadir manuscript[5], the oldest document extant telling of the origin of coffee, observes that Avicenna speaks of the *bunn*, or coffee; as do also Prospero Alpini and Veslingius (Vesling). Bengiazlah, another great physician, contemporary with Avicenna, likewise mentions coffee; by which, says Galland, one may see that we are indebted to physicians for the discovery of coffee, as well as of sugar, tea, and chocolate.

Rauwolf[6] (d. 1596), German physician and botanist, and the first European to mention coffee, who became acquainted with the beverage in Aleppo in 1573, telling how the drink was prepared by the Turks, says:

In this same water they take a fruit called *Bunnu*, which in its bigness, shape, and color is almost like unto a bayberry, with two thin shells surrounded, which, as they informed me, are brought from the *Indies;* but as these in themselves are, and have within them, two yellowish grains in two distinct cells, and besides, being they agree in their virtue, figure, looks, and name with the *Bunchum* of Avicenna and *Bunca* of *Rasis ad Almans* exactly: therefore I take them to be the same.

In Dr. Edward Pocoke's translation (Oxford, 1659) of *The Nature of the Drink Kauhi, or Coffee, and the Berry of which it is Made, Described by an Arabian Phisitian,* we read:

Bun is a plant in *Yaman* [Yemen], which is planted in *Adar*, and groweth up and is gathered in *Ab*. It is about a cubit high, on a stalk about the thickness of one's thumb. It flowers white, leaving a berry like a small nut, but that sometimes it is broad like a bean; and when it is peeled, parteth in two. The best of it is that which is weighty and yellow; the worst, that which is black. It is hot in the first degree, dry in the second: it is usually reported to be cold and dry, but it is not so; for it is bitter, and whatsoever is bitter is hot. It may be that the scorce is hot, and the *Bun* it selfe either of equall temperature, or cold in the first degree.

That which makes for its coldnesse is its stipticknesse. In summer it is by experience found to conduce to the drying of rheumes, and flegmatick coughes and distillations, and the opening of obstructions, and the provocation of urin. It is now known by the name of *Kohwah*. When it is dried and thoroughly boyled, it allayes the ebullition of the blood, is good against the small poxe and measles, the bloudy pimples; yet causeth vertiginous headheach, and maketh lean much, occasioneth waking, and the Emrods, and asswageth lust, and sometimes breeds melancholly.

He that would drink it for livelinesse sake, and to discusse slothfulnesse, and the other properties that we have mentioned, let him use much sweat meates with it, and oyle of pistaccioes, and butter. Some drink it with milk, but it is an error, and such as may bring in danger of the leprosy.

Dufour concludes that the coffee beans of commerce are the same as the *bunchum* (*bunn*) described by Avicenna and the *bunca* (*bunchum*) of Rhazes. In this he agrees, almost word for word, with Rauwolf, indicating no change in opinion among the learned in a hundred years.

Christopher Campen thinks Hippocrates, father of medicine, knew and administered coffee.

Robinson, commenting upon the early adoption of coffee into materia medica, charges that it was a mistake on the part of the Arab physicians, and that it originated the prejudice that caused coffee to be regarded as a powerful drug instead of as a simple and refreshing beverage.

Homer, the Bible, and Coffee

In early Grecian and Roman writings no mention is made of either the coffee plant or the beverage made from the berries. Pierre (Pietro) Della Valle[7] (1586-1652), however, maintains that the *nepenthe*, which Homer says Helen brought with her out of Egypt, and which she employed as surcease for sorrow, was nothing else but coffee mixed with wine.[8] This is disputed by M. Petit, a well known physician of Paris, who died in 1687. Several later British authors, among them, Sandys, the

[4] Galland, Antoine. *Lettre sur l'Origine et le Progres du Café.* Paris, 1699.

[5] The Abd-al-Kadir manuscript is described and illustrated in chapter XXXII.

[6] Rauwolf, Leonhard. *Aigentliche beschreibung der Raisis so er vor diser zeit gegen auffgang inn die morgenlaender volbracht.* Lauwingen, 1582-83.

[7] Della Valle, Pierre (Pietro). *De Constantinople à Bombay, Lettres.* 1615. (vol. 1: p. 90.)

[8] "She mingled with the wine the wondrous juice of a plant which banishes sadness and wrath from the heart and brings with it forgetfulness of every woe."

poet; Burton; and Sir Henry Blount, have suggested the probability of coffee being the "black broth" of the Lacedæmonians.

George Paschius, in his Latin treatise of the *New Discoveries Made since the Time of the Ancients*, printed at Leipsic in 1700,

TRAITEZ

Nouveaux & curieux

DU CAFE',

DU THE'

ET DU

CHOCOLATE.

Ouvrage également neceſſaire aux Medecins, & à tous ceux qui aiment leur ſanté.

Par PHILIPPE SYLVESTRE Dufour

A quoy on a adjouté dans cette Edition, la meilleure de toutes les methodes, qui manquoit à ce Livre, pour compoſer

L'EXCELLENT CHOCOLATE.

Par Mr. St. DISDIER.

Troiſiéme Edition.

A LA HAYE;

Chez ADRIAN MOETJENS, Marchand Libraire prez la Cour, à la Libraire Françoiſe.

M. DC. XCIII.

TITLE PAGE OF DUFOUR'S BOOK, EDITION OF 1693

says he believes that coffee was meant by the five measures of parched corn included among the presents Abigail made to David to appease his wrath, as recorded in the *Bible*, 1 Samuel, xxv, 18. The *Vulgate* translates the Hebrew words *sein kali* into *sata polentea*, which signify wheat, roasted, or dried by fire.

Pierre Étienne Louis Dumant, the Swiss Protestant minister and author, is of the opinion that coffee (and not lentils, as others have supposed) was the red pottage for which Esau sold his birthright; also that the parched grain that Boaz ordered to be given Ruth was undoubtedly roasted coffee berries.

Dufour mentions as a possible objection against coffee that "the use and eating of beans were heretofore forbidden by Pythagoras," but intimates that the coffee bean of Arabia is something different.

Scheuzer,[8] in his *Physique Sacrée*, says "the Turks and the Arabs make with the coffee bean a beverage which bears the same name, and many persons use as a substitute the flour of roasted barley." From this we learn that the coffee substitute is almost as old as coffee itself.

Some Early Legends

After medicine, the church. There are several Mohammedan traditions that have persisted through the centuries, claiming for "the faithful" the honor and glory of the first use of coffee as a beverage. One of these relates how, about 1258 A. D., Sheik Omar, a disciple of Sheik Abou'l hasan Schadheli, patron saint and legendary founder of Mocha, by chance discovered the coffee drink at Ousab in Arabia, whither he had been exiled for a certain moral remissness.

Facing starvation, he and his followers were forced to feed upon the berries growing around them. And then, in the words of the faithful Arab chronicle in the Bibliothéque Nationale at Paris, "having nothing to eat except coffee, they took of it and boiled it in a sauce-pan and drank of the decoction." Former patients in Mocha who sought out the good doctor-priest in his Ousab retreat, for physic with which to cure their ills, were given some of this decoction, with beneficial effect. As a result of the stories of its magical properties, carried back to the city, Sheik Omar was invited to return in triumph to Mocha where the governor caused to be built a monastery for him and his companions.

Another version of this Oriental legend gives it as follows:

The dervish Hadji Omar was driven by his enemies out of Mocha into the desert, where they expected he would die of starvation. This undoubtedly would have occurred if he had not plucked up courage to taste some strange berries which he found growing on a shrub. While they seemed to be edible, they were very bitter; and

[8] Scheuzer, J. J. *Physique Sacrée, ou Histoire Naturelle de la Bible.* Amsterdam, 1732, 1737.

he tried to improve the taste by roasting them. He found, however, that they had become very hard, so he attempted to soften them with water. The berries seemed to remain as hard as before, but the liquid turned brown, and Omar drank it on the chance that it contained some of the nourishment from the berries. He was amazed at how it refreshed him, enlivened his sluggishness, and raised his drooping spirits. Later, when he returned to Mocha, his salvation was considered a miracle. The beverage to which it was due sprang into high favor, and Omar himself was made a saint.

A popular and much-quoted version of Omar's discovery of coffee, also based upon the Abd-al-Kadir manuscript, is the following:

In the year of the Hegira 656, the mollah Schadheli went on a pilgrimage to Mecca. Arriving at the mountain of the Emeralds (Ousab), he turned to his disciple Omar and said: "I shall die in this place. When my soul has gone forth, a veiled person will appear to you. Do not fail to execute the command which he will give you."

The venerable Schadheli being dead, Omar saw in the middle of the night a gigantic specter covered by a white veil.

"Who are you?" he asked.

The phantom drew back his veil, and Omar saw with surprise Schadheli himself, grown ten cubits since his death. The mollah dug in the ground, and water miraculously appeared. The spirit of his teacher bade Omar fill a bowl with the water and to proceed on his way and not to stop till he reached the spot where the water would stop moving.

"It is there," he added, "that a great destiny awaits you."

Omar started his journey. Arriving at Mocha in Yemen, he noticed that the water was immovable. It was here that he must stop.

The beautiful village of Mocha was then ravaged by the plague. Omar began to pray for the sick and, as the saintly man was close to Mahomet, many found themselves cured by his prayers.

The plague meanwhile progressing, the daughter of the King of Mocha fell ill and her father had her carried to the home of the dervish who cured her. But as this young princess was of rare beauty, after having cured her, the good dervish tried to carry her off. The king did not fancy this new kind of reward. Omar was driven from the city and exiled on the mountain of Ousab, with herbs for food and a cave for a home.

"Oh, Schadheli, my dear master," cried the unfortunate dervish one day; "if the things which happened to me at Mocha were destined, was it worth the trouble to give me a bowl to come here?"

To these just complaints, there was heard immediately a song of incomparable harmony, and a bird of marvelous plumage came to rest in a tree. Omar sprang forward quickly toward the little bird which sang so well, but then he saw on the branches of the tree only flowers and fruit. Omar laid hands on the fruit, and found it delicious. Then he filled his great pockets with it and went back to his cave. As he was preparing to boil a few herbs for his dinner, the idea came to him of substituting for this sad soup, some of his harvested fruit. From it he obtained a savory and perfumed drink; it was coffee.

The Italian *Journal of the Savants* for the year 1760 says that two monks, Scialdi and Ayduis, were the first to discover the properties of coffee, and for this reason became the object of special prayers. "Was not this Scialdi identical with the Sheik Schadheli?" asks Jardin.[10]

The most popular legend ascribes the discovery of the drink to an Arabian herdsman in upper Egypt, or Abyssinia, who complained to the abbot of a neighboring monastery that the goats confided to his care became unusually frolicsome after eating the berries of certain shrubs found near their feeding grounds. The abbot, having observed the fact, determined to try the virtues of the berries on himself. He, too, responded with a new exhilaration. Accordingly, he directed that some be boiled, and the decoction drunk by his monks, who thereafter found no difficulty in keeping awake during the religious services of the night. The abbé Massieu in his poem, *Carmen Caffaeum,* thus celebrates the event:

The monks each in turn, as the evening draws near,
Drink 'round the great cauldron — a circle of cheer!
And the dawn in amaze, revisiting that shore,
On idle beds of ease surprised them nevermore!

According to the legend, the news of the "wakeful monastery" spread rapidly, and the magical berry soon "came to be in request throughout the whole kingdom; and in progress of time other nations and provinces of the East fell into the use of it."

The French have preserved the following picturesque version of this legend:

A young goatherd named Kaldi noticed one day that his goats, whose deportment up to that time had been irreproachable, were abandoning themselves to the most extravagant prancings. The venerable buck, ordinarily so dignified and solemn, bounded about like a young kid. Kaldi attributed this foolish gaiety to certain fruits of which the goats had been eating with delight.

The story goes that the poor fellow had a heavy heart; and in the hope of cheering himself up a little, he thought he would pick and eat of the fruit. The experiment succeeded marvelously. He forgot his troubles and became the happiest herder in happy Arabia. When the goats danced, he gaily made himself one of the

[10] Jardin, Edelestan. *Le Caféier et le Café.* Paris, 1895.

party, and entered into their fun with admirable spirit.

One day, a monk chanced to pass by and stopped in surprise to find a ball going on. A score of goats were executing lively pirouettes like a ladies' chain, while the buck solemnly *balancé*-ed, and the herder went through the figures of an eccentric pastoral dance.

The astonished monk inquired the cause of this saltatorial madness; and Kaldi told him of his precious discovery.

Now, this poor monk had a great sorrow; he always went to sleep in the middle of his prayers; and he reasoned that Mohammed with-

ARAB DRINKING COFFEE; CHINAMAN, TEA; AND INDIAN, CHOCOLATE
Frontispiece from Dufour's work

out doubt was revealing this marvelous fruit to him to overcome his sleepiness.

Piety does not exclude gastronomic instincts. Those of our good monk were more than ordinary; because he thought of drying and boiling the fruit of the herder. This ingenious concoction gave us coffee. Immediately all the monks of the realm made use of the drink, because it encouraged them to pray and, perhaps, also because it was not disagreeable.

In those early days it appears that the drink was prepared in two ways; one in which the decoction was made from the hull and the pulp surrounding the bean, and the other from the bean itself. The roasting process came later and is an improvement generally credited to the Persians. There is evidence that the early Mohammedan churchmen were seeking a substitute for the wine forbidden to them by the Koran, when they discovered coffee. The word for coffee in Arabic, *qahwah*, is the same as one of those used for wine; and later on, when coffee drinking grew so popular as to threaten the very life of the church itself, this similarity was seized upon by the church-leaders to support their contention that the prohibition against wine applied also to coffee.

La Roque,[11] writing in 1715, says that the Arabian word *cahouah* signified at first only wine; but later was turned into a generic term applied to all kinds of drink. "So there were really three sorts of coffee; namely, wine, including all intoxicating liquors; the drink made with the shells, or cods, of the coffee bean; and that made from the bean itself."

Originally, then, the coffee drink may have been a kind of wine made from the coffee fruit. In the coffee countries even today the natives are very fond, and eat freely, of the ripe coffee cherries, voiding the seeds. The pulp surrounding the coffee seeds (beans) is pleasant to taste, has a sweetish, aromatic flavor, and quickly ferments when allowed to stand.

Still another tradition (was the wish father to the thought?) tells how the coffee drink was revealed to Mohammed himself by the Angel Gabriel. Coffee's partisans found satisfaction in a passage in the *Koran* which, they said, foretold its adoption by the followers of the Prophet:

> They shall be given to drink an excellent wine, sealed; its seal is that of the musk.

The most diligent research does not carry a knowledge of coffee back beyond the time of Rhazes, two hundred years after Mohammed; so there is little more than speculation or conjecture to support the theory that it was known to the ancients, in Bible times or in the days of The Praised One. Our knowledge of tea, on the other hand, antedates the Christian era. We know also that tea was intensively cultivated

[11] La Roque, Jean. *Voyage dans l'Arabie Heureuse, de 1708 à 1713, et Traité Historique du Café.* Paris, 1715. (pp. 247, 251.)

and taxed under the Tang dynasty in China, A. D. 793, and that Arab traders knew of it in the following century.

The First Reliable Coffee Date

About 1454 Sheik Gemaleddin Abou Muhammad Bensaid, mufti of Aden, surnamed Aldhabhani, from Dhabhan, a small town where he was born, became acquainted with the virtues of coffee on a journey into Abyssinia.[13] Upon his return to Aden, his health became impaired; and remembering the coffee he had seen his countrymen drinking in Abyssinia, he sent for some in the hope of finding relief. He not only recovered from his illness; but, because of its sleep-dispelling qualities, he sanctioned the use of the drink among the dervishes "that they might spend the night in prayers or other religious exercises with more attention and presence of mind."[14]

It is altogether probable that the coffee drink was known in Aden before the time of Sheik Gemaleddin; but the endorsement of the very learned imam, whom science and religion had already made famous, was sufficient to start a vogue for the beverage that spread throughout Yemen, and thence to the far corners of the world. We read in the Arabian manuscript at the Bibliothéque Nationale that lawyers, students, as well as travelers who journeyed at night, artisans, and others, who worked at night, to escape the heat of the day, took to drinking coffee; and even left off another drink, then becoming popular, made from the leaves of a plant called *khat* or *cat* (*catha edulis*).

Sheik Gemaleddin was assisted in his work of spreading the gospel of this the first propaganda for coffee by one Muhammed Alhadrami, a physician of great reputation, born in Hadramaut, Arabia Felix.

A recently unearthed and little known version of coffee's origin shows how features of both the Omar tradition and the Gemaleddin story may be combined by a professional Occidental tale-writer[14]:

Toward the middle of the fifteenth century, a poor Arab was traveling in Abyssinia. Finding himself weak and weary, he stopped near a grove. For fuel wherewith to cook his rice, he cut down a tree that happened to be covered with dried berries. His meal being cooked and eaten, the traveler discovered that these half-burnt berries were fragrant. He collected a number of them and, on crushing them with a stone, found that the aroma was increased to a great extent. While wondering at this, he accidentally let the substance fall into an earthen vessel that contained his scanty supply of water.

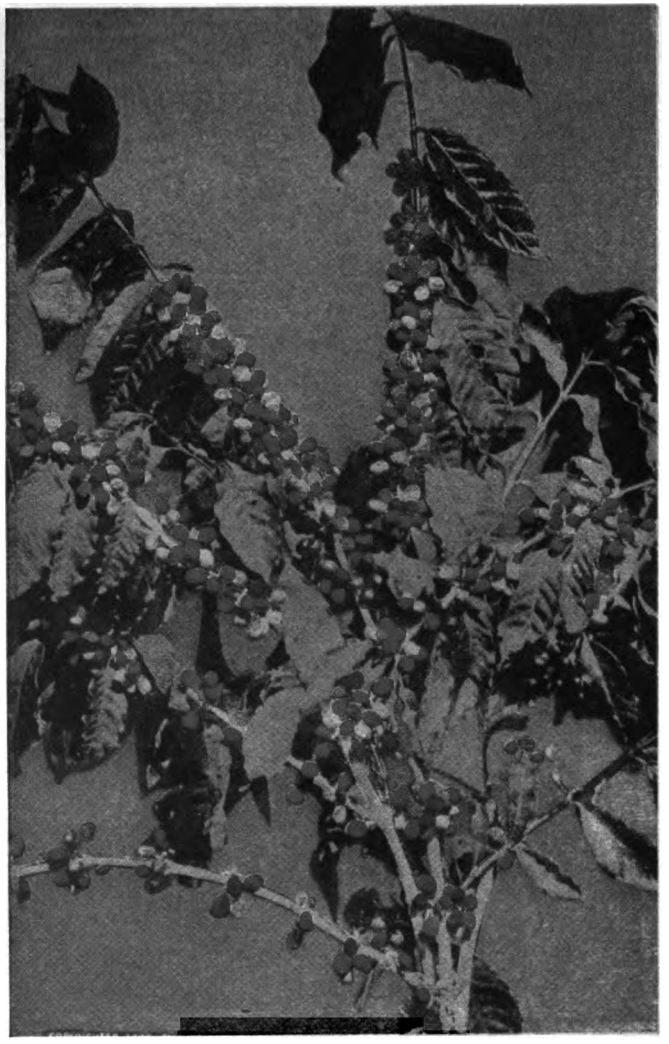
A miracle! The almost putrid water was purified. He brought it to his lips; it was fresh and agreeable; and after a short rest the traveler so far recovered his strength and energy as to be able to resume his journey. The lucky Arab gathered as many berries as he could, and having arrived at Aden, informed the mufti of his discovery. That worthy was an inveterate opium-smoker, who had been suffering for years from the influence of the poisonous drug. He tried an infusion of the roasted berries, and was so delighted at the recovery of his former vigor that in gratitude to the tree he called it *cahuha* which in Arabic signifies "force".

Galland, in his analysis of the Arabian manuscript, already referred to, that has furnished us with the most trustworthy account of the origin of coffee, criticizes Antoine Faustus Nairon, Maronite professor of Oriental languages at Rome, who was the author of the first printed treatise on coffee only,[15] for accepting the legends relating to Omar and the Abyssinian goatherd. He says they are unworthy of belief as facts of history, although he is careful to add that there is *some* truth in the story of the discovery of coffee by the Abyssinian goats and the abbot who prescribed the use of the berries for his monks, "the Eastern Christians being willing to have the honor of the invention of coffee, for the abbot, or prior, of the convent and his companions are only the mufti Gemaleddin and Muhammid Alhadrami, and the monks are the dervishes."

Amid all these details, Jardin reaches the conclusion that it is to chance we must attribute the knowledge of the properties of coffee, and that the coffee tree was transported from its native land to Yemen, as far as Mecca, and possibly into Persia, before being carried into Egypt.

Coffee, being thus favorably introduced into Aden, it has continued there ever since, without interruption. By degrees the cultivation of the plant and the use of the beverage passed into many neighboring places. Toward the close of the fifteenth century (1470 - 1500) it reached Mecca and Medina, where it was introduced, as at Aden, by the dervishes, and for the same religious purpose. About 1510 it reached Grand Cairo in Egypt, where the dervishes from Yemen, living in a district by themselves, drank coffee on the

[13] *Adjam*, by many writers wrongly rendered Persia.
[13] Scheuzer, J. J. *Physique Sacrée, ou Histoire Naturelle de la Bible.* Amsterdam, 1732, 1737.
[14] *Harper's Weekly.* New York, 1911. (Jan. 21.)
[15] Nairon, Antoine Faustus. *De Saluberrimâ Cahue seu Café nuncupata Discursus.* Rome, 1671.



A Bouquet of Ripe Fruit

Flowers, Fruit, and Leaves

THE COFFEE TREE BEARS FRUIT, LEAF, AND BLOSSOM AT THE SAME TIME

nights they intended to spend in religious devotion. They kept it in a large red earthen vessel — each in turn receiving it, respectfully, from their superior, in a small bowl, which he dipped into the jar — in the meantime chanting their prayers, the burden of which was always: "There is no God but one God, the true King, whose power is not to be disputed."

After the dervishes, the bowl was passed to lay members of the congregation. In this way coffee came to be so associated with the act of worship that "they never performed a religious ceremony in public and never observed any solemn festival without taking coffee."

Meanwhile, the inhabitants of Mecca became so fond of the beverage that, disregarding its religious associations, they made of it a secular drink to be sipped publicly in *kaveh kanes*, the first coffee houses. Here the idle congregated to drink coffee, to play chess and other games, to discuss the news of the day, and to amuse themselves with singing, dancing, and music, contrary to the manners of the rigid Mahommedans, who were very properly scandalized by such performances. In Medina and in Cairo, too, coffee became as common a drink as in Mecca and Aden.

The First Coffee Persecution

At length the pious Mahommedans began to disapprove of the use of coffee among the people. For one thing, it made common one of the best psychology - adjuncts of their religion; also, the joy of life, that it helped to liberate among those who frequented the coffee houses, precipitated social, political, and religious arguments; and these frequently developed into disturbances. Dissensions arose even among the churchmen themselves. They divided into camps for and against coffee. The law of the Prophet on the subject of wine was variously construed as applying to coffee.

About this time (1511) Kair Bey was governor of Mecca for the sultan of Egypt. He appears to have been a strict disciplinarian, but lamentably ignorant of the actual conditions obtaining among his people. As he was leaving the mosque one evening after prayers, he was offended by seeing in a corner a company of coffee drinkers who were preparing to pass the night in prayer. His first thought was that they were drinking wine; and great was his astonishment when he learned what the liquor really was and how common was its use throughout the city. Further investigation convinced him that indulgence in this exhilarating drink must incline men and women to extravagances prohibited by law, and so he determined to suppress it. First he drove the coffee drinkers out of the mosque.

The next day, he called a council of officers of justice, lawyers, physicians, priests, and leading citizens, to whom he declared what he had seen the evening before at the mosque; and, "being resolved to put a stop to the coffee-house abuses, he sought their advice upon the subject." The chief count in the indictment was that "in these places men and women met and played tambourines, violins, and other musical instruments. There were also people who played chess, mankala, and other similar games, for money; and there were many other things done contrary to our sacred law — may God keep it from all corruption until the day when we shall all appear before him!"[16]

The lawyers agreed that the coffee houses needed reforming; but as to the drink itself, inquiry should be made as to whether it was in any way harmful to mind or body; for if not, it might not be sufficient to close the places that sold it. It was suggested that the opinion of the physicians be sought.

Two brothers, Persian physicians named Hakimani, and reputed the best in Mecca, were summoned, although we are told they knew more about logic than they did about physic. One of them came into the council fully prejudiced, as he had already written a book against coffee, and filled with concern for his profession, being fearful lest the common use of the new drink would make serious inroads on the practise of medicine. His brother joined with him in assuring the assembly that the plant *bunn*, from which coffee was made, was "cold and dry" and so unwholesome. When another physician present reminded them that Bengiazlah, the ancient and respected contemporary of Avicenna, taught that it was "hot and dry," they made arbitrary answer that Bengiazlah had in mind another plant of the same name, and that anyhow, it was not material; for, if the coffee drink disposed people to things forbidden by religion, the safest course for

[16] de Sacy, Baron Antoine Isaac Silvestre. *Chrestomathie Arabe.* Paris, 1806. (vol. II: p. 224.)

Mahommedans was to look upon it as unlawful.

The friends of coffee were covered with confusion. Only the mufti spoke out in the meeting in its favor. Others, carried away by prejudice or misguided zeal, affirmed that coffee clouded their senses. One man arose and said it intoxicated like wine; which made every one laugh, since he could hardly have been a judge of this if he had not drunk wine, which is forbidden by the Mohammedan religion. Upon being asked whether he had ever drunk any, he was so imprudent as to admit that he had, thereby condemning himself out of his own mouth to the bastinado.

The mufti of Aden, being both an officer of the court and a divine, undertook, with some heat, a defense of coffee; but he was clearly in an unpopular minority. He was rewarded with the reproaches and affronts of the religious zealots.

So the governor had his way, and coffee was solemnly condemned as thing forbidden by the law; and a presentment was drawn up, signed by a majority of those present, and dispatched post-haste by the governor to his royal master, the sultan, at Cairo. At the same time, the governor published an edict forbidding the sale of coffee in public or private. The officers of justice caused all the coffee houses in Mecca to be shut, and ordered all the coffee found there, or in the merchants' warehouses, to be burned.

Naturally enough, being an unpopular edict, there were many evasions, and much coffee drinking took place behind closed doors. Some of the friends of coffee were outspoken in their opposition to the order, being convinced that the assembly had rendered a judgment not in accordance with the facts, and above all, contrary to the opinion of the mufti who, in every Arab community, is looked up to as the interpreter, or expounder, of the law. One man, caught in the act of disobedience, besides being severely punished, was also led through the most public streets of the city seated on an ass.

However, the triumph of the enemies of coffee was short-lived; for not only did the sultan of Cairo disapprove the "indiscreet zeal" of the governor of Mecca, and order the edict revoked; but he read him a severe lesson on the subject. How dared he condemn a thing approved at Cairo, the capital of his kingdom, where there were physicians whose opinions carried more weight than those of Mecca, and who had found nothing against the law in the use of coffee? The best things might be abused, added the sultan, even the sacred waters of Zamzam, but this was no reason for an absolute prohibition. The fountain, or well, of Zamzam, according to the Mohammedan teaching, is the same which God caused to spring up in the desert to comfort Hagar and Ishmael when Abraham banished them. It is in the enclosure of the temple at Mecca; and the Mohammedans drink of it with much show of devotion, ascribing great virtues to it.

It is not recorded whether the misguided governor was shocked at this seeming profanity; but it is known that he hastened to obey the orders of his lord and master. The prohibition was recalled, and thereafter he employed his authority only to preserve order in the coffee houses. The friends of coffee, and the lovers of poetic justice, found satisfaction in the governor's subsequent fate. He was exposed as "an extortioner and a public robber," and "tortured to death," his brother killing himself to avoid the same fate. The two Persian physicians who had played so mean a part in the first coffee persecution, likewise came to an unhappy end. Being discredited in Mecca they fled to Cairo, where, in an unguarded moment, having cursed the person of Selim I, emperor of the Turks, who had conquered Egypt, they were executed by his order.

Coffee, being thus re-established at Mecca, met with no opposition until 1524, when, because of renewed disorders, the kadi of the town closed the coffee houses, but did not seek to interfere with coffee drinking at home and in private. His successor, however, re-licensed them; and, continuing on their good behavior since then, they have not been disturbed.

In 1542 a ripple was caused by an order issued by Soliman the Great, forbidding the use of coffee; but no one took it seriously, especially as it soon became known that the order had been obtained "by surprise" and at the desire of only one of the court ladies "a little too nice in this point."

One of the most interesting facts in the history of the coffee drink is that wherever it has been introduced it has spelled revolution. It has been the world's most radical drink in that its function has always been to make people think. And when the people began to think, they be-

came dangerous to tyrants and to foes of liberty of thought and action. Sometimes the people became intoxicated with their new found ideas; and, mistaking liberty for license, they ran amok, and called down upon their heads persecutions and many petty intolerances. So history repeated itself in Cairo, twenty-three years after the first Mecca persecution.

Coffee's Second Religious Persecution

Selim I, after conquering Egypt, had brought coffee to Constantinople in 1517. The drink continued its progress through Syria, and was received in Damascus (about 1530), and in Aleppo (about 1532), without opposition. Several coffee houses of Damascus attained wide fame, among them the Café of the Roses, and the Café of the Gate of Salvation.

Its increasing popularity and, perhaps, the realization that the continued spread of the beverage might lessen the demand for his services, caused a physician of Cairo to propound (about 1523) to his fellows this question:

> What is your opinion concerning the liquor called coffee which is drank in company, as being reckoned in the number of those we have free leave to make use of, notwithstanding it is the cause of no small disorders, that it flies up into the head and is very pernicious to health? Is it permitted or forbidden?

At the end he was careful to add, as his own opinion (and without prejudice?), that coffee was unlawful. To the credit of the physicians of Cairo as a class, it should be recorded that they looked with unsympathetic eyes upon this attempt on the part of one of their number to stir up trouble for a valuable adjunct to their materia medica, and so the effort died a-borning.

If the physicians were disposed to do nothing to stop coffee's progress, not so the preachers. As places of resort, the coffee houses exercised an appeal that proved stronger to the popular mind than that of the temples of worship. This to men of sound religious training was intolerable. The feeling against coffee smouldered for a time; but in 1534 it broke out afresh. In that year a fiery preacher in one of Cairo's mosques so played upon the emotions of his congregation with a preachment against coffee, claiming that it was against the law and that those who drank it were not true Mohammedans, that upon leaving the building a large number of his hearers, enraged, threw themselves into the first coffee house they found in their way, burned the coffee pots and dishes, and maltreated all the persons they found there.

Public opinion was immediately aroused; and the city was divided into two parties; one maintaining that coffee was against the law of Mohammed, and the other taking the contrary view. And then arose a Solomon in the person of the chief justice, who summoned into his presence the learned physicians for consultation. Again the medical profession stood by its guns. The medical men pointed out to the chief justice that the question had already been decided by their predecessors on the side of coffee, and that the time had come to put some check "on the furious zeal of the bigots" and the "indiscretions of ignorant preachers." Whereupon, the wise judge caused coffee to be served to the whole company and drank some himself. By this act he "re-united the contending parties, and brought coffee into greater esteem than ever."

Coffee in Constantinople

The story of the introduction of coffee into Constantinople shows that it experienced much the same vicissitudes that marked its advent at Mecca and Cairo. There were the same disturbances, the same unreasoning religious superstition, the same political hatreds, the same stupid interference by the civil authorities; and yet, in spite of it all, coffee attained new honors and new fame. The Oriental coffee house reached its supreme development in Constantinople.

Although coffee had been known in Constantinople since 1517, it was not until 1554 that the inhabitants became acquainted with that great institution of early eastern democracy — the coffee house. In that year, under the reign of Soliman the Great, son of Selim I, one Schemsi of Damascus and one Hekem of Aleppo opened the first two coffee houses in the quarter called Taktacalah. They were wonderful institutions for those days, remarkable alike for their furnishings and their comforts, as well as for the opportunity they afforded for social intercourse and free discussion. Schemsi and Hekem received their guests on "very neat couches or sofas," and the admission was the price of a dish of coffee — about one cent.

Turks, high and low, took up the idea with avidity. Coffee houses increased in

number. The demand outstripped the supply. In the seraglio itself special officers (*kahvedjibachi*) were commissioned to prepare the coffee drink for the sultan. Coffee was in favor with all classes.

The Turks gave to the coffee houses the name *kahveh kanes* (*diversoria,* Cotovicus called them); and as they grew in popularity, they became more and more luxurious. There were lounges, richly carpeted; and in addition to coffee, many other means of entertainment. To these "schools of the wise" came the "young men ready to enter upon offices of judicature; kadis from the provinces, seeking re-instatement or new appointments; muderys, or professors; officers of the seraglio; bashaws; and the principal lords of the port," not to mention merchants and travelers from all parts of the then known world.

Coffee House Persecutions

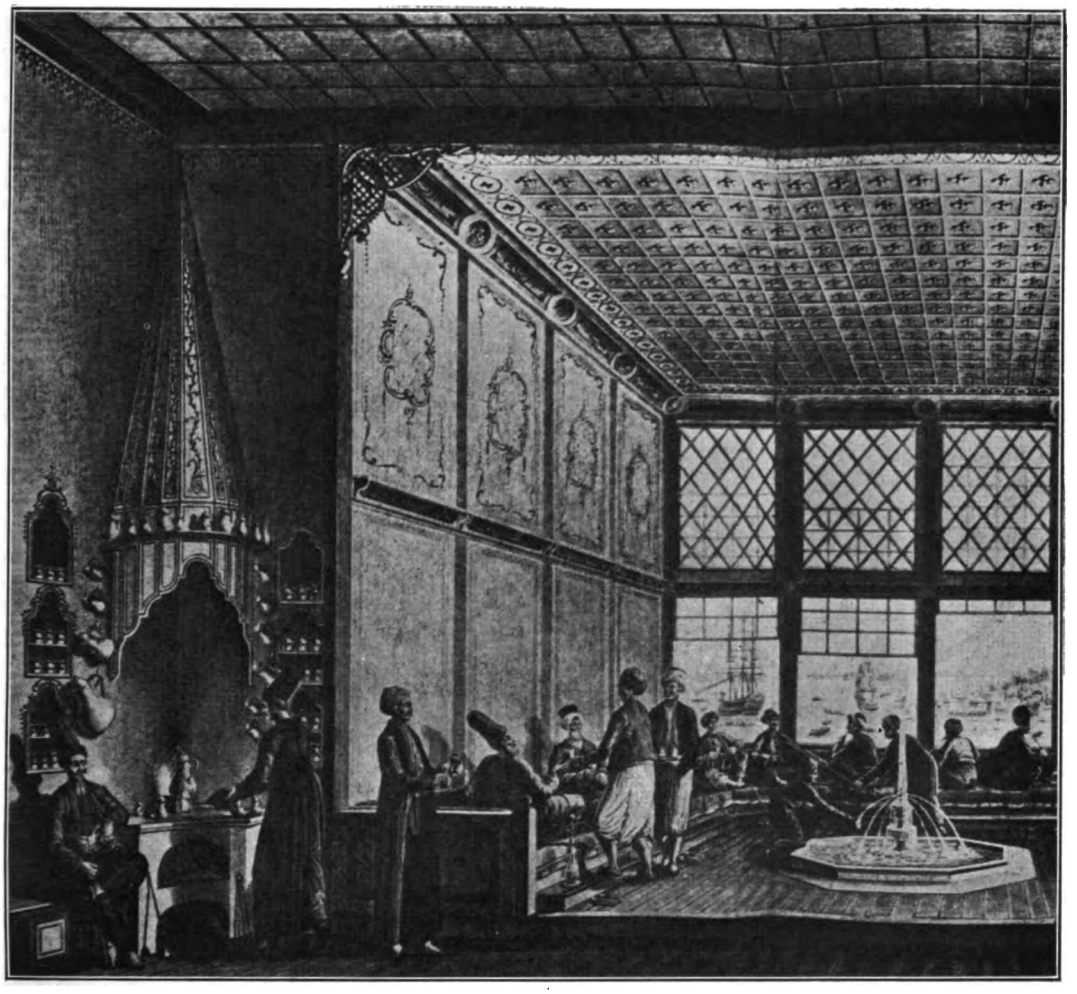
About 1570, just when coffee seemed settled for all time in the social scheme, the imams and dervishes raised a loud wail against it, saying the mosques were almost empty, while the coffee houses were always full. Then the preachers joined in the clamor, affirming it to be a greater sin to go to a coffee house than to enter a tavern. The authorities began an examination; and the same old debate was on. This time, however, appeared a mufti who was unfriendly to coffee. The religious fanatics argued that Mohammed had not even known of coffee, and so could not have used the drink, and, therefore, it must be an abomination for his followers to do so. Further, coffee was burned and ground to charcoal before making a drink of it; and the *Koran* distinctly forbade the use of charcoal, including it among the unsanitary foods. The mufti decided the question in favor of the zealots, and coffee was forbidden by law.

The prohibition proved to be more honored in the breach than in the observance. Coffee drinking continued in secret, instead of in the open. And when, about 1580, Amurath III, at the further solicitation of the churchmen, declared in an edict that coffee should be classed with wine, and so prohibited in accordance with the law of the Prophet, the people only smiled, and persisted in their secret disobedience. Already they were beginning to think for themselves on religious as well as political matters. The civil officers, finding it useless to try to suppress the custom, winked at violations of the law; and, for a consideration, permitted the sale of coffee privately, so that many Ottoman "speak-easies" sprung up — places where coffee might be had behind shut doors; shops where it was sold in back-rooms.

This was enough to re-establish the coffee houses by degrees. Then came a mufti less scrupulous or more knowing than his predecessor, who declared that coffee was not to be looked upon as coal, and that the drink made from it was not forbidden by the law. There was a general renewal of coffee drinking; religious devotees, preachers, lawyers, and the mufti himself indulging in it, their example being followed by the whole court and the city.

After this, the coffee houses provided a handsome source of revenue to each succeeding grand vizier; and there was no further interference with the beverage until the reign of Amurath IV, when Grand Vizier Kuprili, during the war with Candia, decided that for political reasons, the coffee houses should be closed. His argument was much the same as that advanced more than a hundred years later by Charles II of England, namely, that they were hotbeds of sedition. Kuprili was a military dictator, with nothing of Charles's vacillating nature; and although, like Charles, he later rescinded his edict, he enforced it, while it was effective, in no uncertain fashion. Kuprili was no petty tyrant. For a first violation of the order, cudgeling was the punishment; for a second offense, the victim was sewn in a leather bag and thrown into the Bosporus. Strangely enough, while he suppressed the coffee houses, he permitted the taverns, that sold wine forbidden by the *Koran,* to remain open. Perhaps he found the latter produced a less dangerous kind of mental stimulation than that produced by coffee. Coffee, says Virey, was too intellectual a drink for the fierce and senseless administration of the pashas.

Even in those days it was not possible to make people good by law. Paraphrasing the copy-book, suppressed desires will arise, though all the world o'erwhelm them, to men's eyes. An unjust law was no more enforceable in those centuries than it is in the twentieth century. Men are humans first, although they may become brutish when bereft of reason. But coffee does not steal away their reason; rather, it sharpens their reasoning faculties. As Galland has truly said: "Coffee joins men, born for



CHARACTERISTIC SCENE IN A TURKISH COFFEE HOUSE OF THE SEVENTEENTH CENTURY

society, in a more perfect union; protestations are more sincere in being made at a time when the mind is not clouded with fumes and vapors, and therefore not easily forgotten, which too frequently happens when made over a bottle."

Despite the severe penalties staring them in the face, violations of the law were plentiful among the people of Constantinople. Venders of the beverage appeared in the market-places with "large copper vessels with fire under them; and those who had a mind to drink were invited to step into any neighboring shop where every one was welcome on such an account."

Later, Kuprili, having assured himself that the coffee houses were no longer a menace to his policies, permitted the free use of the beverage that he had previously forbidden.

Coffee and Coffee Houses in Persia

Some writers claim for Persia the discovery of the coffee drink; but there is no evidence to support the claim. There are, however, sufficient facts to justify a belief that here, as in Ethiopia, coffee has been known from time immemorial — which is a very convenient phrase. At an early date the coffee house became an established institution in the chief towns. The Persians appear to have used far more intelligence than the Turks in handling the political phase of the coffee-house question, and so it never became necessary to order them suppressed in Persia.

The wife of Shah Abbas, observing that great numbers of people were wont to gather and to talk politics in the leading coffee house of Ispahan, appointed a mol-

lah — an ecclesiastical teacher and expounder of the law — to sit there daily to entertain the frequenters of the place with nicely turned points of history, law, and poetry. Being a man of wisdom and great tact, he avoided controversial questions of state; and so politics were kept in the background. He proved a welcome visitor, and was made much of by the guests. This example was generally followed, and as a result disturbances were rare in the coffee houses of Ispahan.

Adam Olearius[17] (1599 - 1671), who was secretary to the German Embassy that traveled in Turkey in 1633 - 36, tells of the great diversions made in Persian coffee houses "by their poets and historians, who are seated in a high chair from whence they make speeches and tell satirical stories, playing in the meantime with a little stick and using the same gestures as our jugglers and legerdemain men do in England."

At court conferences conspicuous among the shah's retinue were always to be seen the "kahvedjibachi," or "coffee-pourers."

Early Coffee Manners and Customs

Karstens Niebuhr[18] (1733 - 1815), the Hanoverian traveler, furnishes the following description of the early Arabian, Syrian, and Egyptian coffee houses:

> They are commonly large halls, having their floors spread with mats, and illuminated at night by a multitude of lamps. Being the only theaters for the exercise of profane eloquence, poor scholars attend here to amuse the people. Select portions are read, *e. g.* the adventures of Rustan Sal, a Persian hero. Some aspire to the praise of invention, and compose tales and fables. They walk up and down as they recite, or assuming oratorial consequence, harangue upon subjects chosen by themselves.
>
> In one coffee house at Damascus an orator was regularly hired to tell his stories at a fixed hour; in other cases he was more directly dependent upon the taste of his hearers, as at the conclusion of his discourse, whether it had consisted of literary topics or of loose and idle tales, he looked to the audience for a voluntary contribution.
>
> At Aleppo, again, there was a man with a soul above the common, who, being a person of distinction, and one that studied merely for his own pleasure, had yet gone the round of all the coffee houses in the city to pronounce moral harangues.

In some coffee houses there were singers and dancers, as before, and many came to listen to the marvelous tales of the *Thousand and One Nights.*

In Oriental countries it was once the custom to offer a cup of "bad coffee," i.e., coffee containing poison, to those functionaries or other persons who had proven themselves embarrassing to the authorities.

While coffee drinking started as a private religious function, it was not long after its introduction by the coffee houses that it became secularized still more in the homes of the people, although for centuries it retained a certain religious significance. Galland says that in Constantinople, at the time of his visit to the city, there was no house, rich or poor, Turk or Jew, Greek or Armenian, where it was not drunk at least twice a day, and many drank it oftener, for it became a custom in every house to offer it to all visitors; and it was considered an incivility to refuse it. Twenty dishes a day, per person, was not an uncommon average.

Galland observes that "as much money must be spent in the private families of Constantinople for coffee as for wine at Paris," and relates that it is as common for beggars to ask for money to buy coffee, as it is in Europe to ask for money to buy wine or beer.

At this time to refuse or to neglect to give coffee to their wives was a legitimate cause for divorce among the Turks. The men made promise when marrying never to let their wives be without coffee. "That," says Fulbert de Monteith, "is perhaps more prudent than to swear fidelity."

Another Arabic manuscript by Bichivili in the Bibliothéque Nationale at Paris furnishes us with this pen picture of the coffee ceremony as practised in Constantinople in the sixteenth century:

> In all the great men's houses, there are servants whose business it is only to take care of the coffee; and the head officer among them, or he who has the inspection over all the rest, has an apartment allowed him near the hall which is destined for the reception of visitors. The Turks call this officer *Kavveghi*, that is, Overseer or Steward of the Coffee. In the harem or ladies' apartment in the seraglio, there are a great many such officers, each having forty or fifty *Baltagis* under them, who, after they have served a certain time in these coffee-houses, are sure to be well provided for, either by an advantageous post, or a sufficient quantity of land. In the houses of persons of quality likewise, there are pages, called *Itchoglans*, who receive the coffee from the stewards, and present it to the company with surprising dexterity and address, as soon as the master of the family makes a sign for that purpose, which is all the language they ever speak to them. . . . The coffee is served on salvers without feet, made commonly

[17] Olearius, Adam. *An Account of His Journeys.* London, 1669.

[18] Niebuhr, Karstens. *Description of Arabia.* Amsterdam, 1774. (Heron trans., London, 1792; p. 266.)

SERVING COFFEE TO A GUEST.—AFTER A DRAWING IN AN EARLY EDITION OF "ARABIAN NIGHTS"

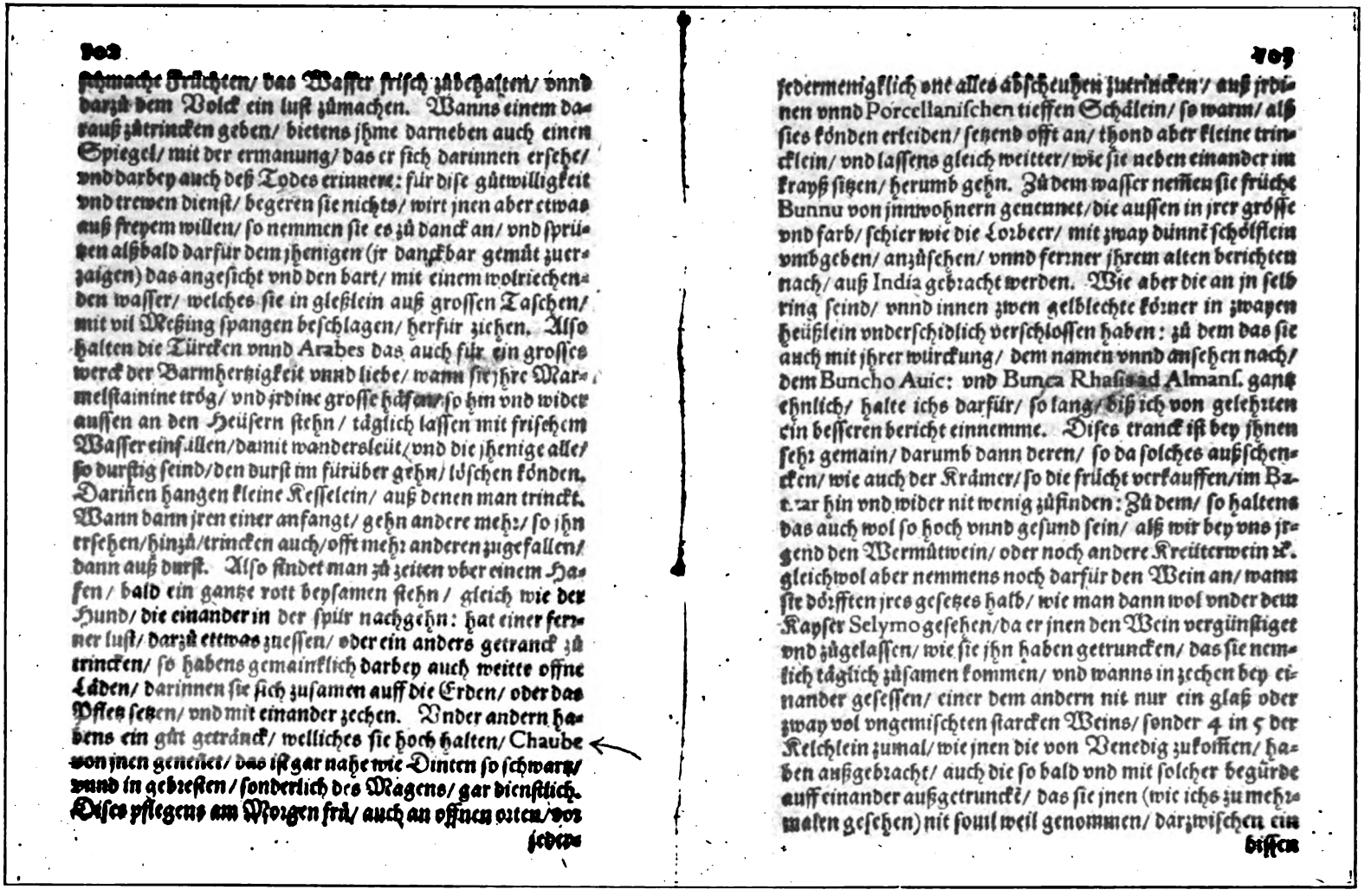
of painted or varnished wood, and sometimes of silver. They hold from 15 to 20 china dishes each; and such as can afford it have these dishes half set in silver . . . the dish may be easily held with the thumb below and two fingers on the upper edge.

In his *Relation of a Journey to Constantinople in 1657*, Nicholas Rolamb, the Swedish traveler and envoy to the Ottoman Porte, gives us this early glimpse of coffee in the home life of the Turks:[19]

This [coffee] is a kind of pea that grows in *Egypt*, which the *Turks* pound and boil in water, and take it for pleasure instead of brandy, sipping it through the lips boiling hot, persuading themselves that it consumes catarrhs, and prevents the rising of vapours out of the stomach into the head. The drinking of this coffee and smoking tobacco (for tho' the use of tobacco is forbidden on pain of death, yet it is used in *Constantinople* more than any where by men as well as women, tho' secretly) makes up all the pastime among the *Turks*, and is the only thing they treat one another with; for which reason all people of distinction have a particular room next their own, built on purpose for it, where there stands a jar of coffee continually boiling.

It is curious to note that among several misconceptions that were held by some of the peoples of the Levant was one that coffee was a promoter of impotence, although a Persian version of the Angel Gabriel legend says that Gabriel invented it to restore the Prophet's failing metabolism. Often in Turkish and Arabian literature, however, we meet with the suggestion that coffee drinking makes for sterility and barrenness, a notion that modern medicine has exploded; for now we know that coffee stimulates the racial instinct, for which tobacco is a sedative.

[19] *A Collection of Voyages and Travels.* London, 1745. (vol. iv: p. 690.)



102

ſchmacht Früchten/ das Waſſer friſch zůbehalten/ vnnd darzů dem Volck ein luſt zůmachen. Wanns einem darauß zůtrincken geben/ bietens jhme darneben auch einen Spiegel/ mit der ermanung/ das er ſich darinnen erſehe/ vnd darbey auch deß Todes erinnere: für diſe gůtwilligkeit vnd trewen dienſt/ begeren ſie nichts/ wirt jnen aber etwas auß freyem willen/ ſo nemmen ſie es zů danck an/ vnd ſprützen alßbald darfür dem jhenigen (jr danckbar gemůt zuerzaigen) das angeſicht vnd den bart/ mit einem wolriechenden waſſer/ welches ſie in gleßlein auß groſſen Taſchen/ mit vil Meßing ſpangen beſchlagen/ herfür ziehen. Alſo halten die Türcken vnnd Arabes das auch für ein groſſes werck der Barmhertzigkeit vnnd liebe/ wann ſie jhre Marmelſtainine trög/ vnd jrdine groſſe häfen ſo hin vnd wider auſſen an den Heüſern ſtehn/ täglich laſſen mit friſchem Waſſer einfüllen/damit wandersleüt/vnd die jhenige alle/ ſo durſtig ſeind/den durſt im fürüber gehn/ löſchen kónden. Dariñen hangen kleine Keſſelein/ auß denen man trinckt. Wann dann jren einer anfangt/ gehn andere mehr/ ſo jhn erſehen/hinzů/trincken auch/offt mehr anderen zugefallen/ dann auß durſt. Alſo findet man zů zeiten vber einem Hafen/ bald ein gantze rott beyſamen ſtehn/ gleich wie der Hund/ die einander in der ſpür nachgehn: hat einer ferner luſt/ darzů ettwas zueſſen/ oder ein anders getranck zů trincken/ ſo habens gemainklich darbey auch weitte offne Láden/ darinnen ſie ſich zuſamen auff die Erden/ oder das Pflaſter ſetzen/ vnd mit einander zechen. Vnder andern habens ein gůt getránck/ welliches ſie hoch halten/ Chaube von jnen geneñet/ das iſt gar nahe wie Dinten ſo ſchwarz/ vnnd in gebreſten/ ſonderlich des Magens/ gar dienſtlich. Diſes pflegens am Morgen frů/ auch an offnen orten/ vor jedem

103

federmenigklich one alles abſcheuhen zutrincken/ auß jrdinen vnnd Porcellaniſchen tieffen Schálein/ ſo warm/ alß ſies kónden erleiden/ ſetzend offt an/ thond aber kleine trincklein/ vnd laſſens gleich weitter/ wie ſie neben einander im krayß ſitzen/ herumb gehn. Zů dem waſſer nemen ſie frůchte Bunnu von jnnwohnern genennet/die auſſen in jrer gröſſe vnd farb/ ſchier wie die Lorbeer/ mit zway dünnē ſchölflein vmbgeben/ anzůſehen/ vnnd ferner jhrem alten berichten nach/ auß India gebracht werden. Wie aber die an jn ſelb ring ſeind/ vnnd innen zwen gelblechte kórner in zwayen heüßlein vnderſchidlich verſchloſſen haben: zů dem das ſie auch mit jhrer würckung/ dem namen vnnd anſehen nach/ dem Buncho Auic: vnd Bunca Rhaſis ad Almanſ. gantz ehnlich/ halte ichs darfür/ ſo lang/ biß ich von gelehrten ein beſſeren bericht einnemme. Diſes tranck iſt bey jhnen ſehr gemain/ darumb dann deren/ ſo da ſolches außſchencken/ wie auch der Krämer/ ſo die frücht verkauffen/im Bazar hin vnd wider nit wenig zůfinden: Zů dem/ ſo haltens das auch wol ſo hoch vnnd geſund ſein/ alß wir bey vns jrgend den Wermůtwein/ oder noch andere Kreůterwein ꝛc. gleichwol aber nemmens noch darfür den Wein an/ wann ſie dörfften jres geſetzes halb/ wie man dann wol vnder dem Kayſer Selymo geſehen/da er jnen den Wein vergünſtiget vnd zůgelaſſen/ wie ſie jhn haben getruncken/ das ſie nemlich täglich zůſamen kommen/ vnd wanns in zechen bey einander geſeſſen/ einer dem andern nit nur ein glaß oder zway vol vngemiſchten ſtarcken Weins/ ſonder 4 in 5 der Kelchlein zumal/ wie jnen die von Venedig zukomen/ haben außgebracht/ auch die ſo bald vnd mit ſolcher begürde auff einander außgetruncken/ das ſie jnen (wie ichs zu mehrmalen geſehen) nit ſouil weil genommen/ darzwiſchen ein biſſen

THE FIRST PRINTED REFERENCE TO COFFEE, AS IT APPEARS IN RAUWOLF'S WORK, 1582

CHAPTER IV

INTRODUCTION OF COFFEE INTO WESTERN EUROPE

When the three great temperance beverages, cocoa, tea, and coffee, came to Europe — Coffee first mentioned by Rauwolf in 1582 — Early days of coffee in Italy — How Pope Clement VIII baptized it and made it a truly Christian beverage — The first European coffee house, in Venice, 1645 — The famous Caffè Florian — Other celebrated Venetian coffee houses of the eighteenth century — The romantic story of Pedrocchi, the poor lemonade-vender, who built the most beautiful coffee house in the world

OF the world's three great temperance beverages, cocoa, tea, and coffee, cocoa was the first to be introduced into Europe, in 1528, by the Spanish. It was nearly a century later, in 1610, that the Dutch brought tea to Europe. Venetian traders introduced coffee into Europe in 1615.

Europe's first knowledge of coffee was brought by travelers returning from the Far East and the Levant. Leonhard Rauwolf started on his famous journey into the Eastern countries from Marseilles in September, 1573, having left his home in Augsburg, the 18th of the preceding May. He reached Aleppo in November, 1573; and returned to Augsburg, February 12, 1576. He was the first European to mention coffee; and to him also belongs the honor of being the first to refer to the beverage in print.

Rauwolf was not only a doctor of medicine and a botanist of great renown, but also official physician to the town of Augsburg. When he spoke, it was as one having authority. The first printed reference to coffee appears as *chaube* in chapter viii of *Rauwolf's Travels*, which deals with the manners and customs of the city of Aleppo. The exact passage is reproduced herewith as it appears in the original German edition of Rauwolf published at Frankfort and Lauingen in 1582 - 83. The translation is as follows:

> If you have a mind to eat something or to drink other liquors, there is commonly an open shop near it, where you sit down upon the ground or carpets and drink together. Among the rest they have a very good drink, by them called *Chaube* [coffee] that is almost as black as ink, and very good in illness, chiefly that of the stomach; of this they drink in the morning early in open places before everybody, without any fear or regard, out of *China* cups, as hot as they can; they put it often to their lips but drink but little at a time, and let it go round as they sit.
>
> In this same water they take a fruit called *Bunnu* which in its bigness, shape and color is almost like unto a bayberry, with two thin shells surrounded, which, as they informed me, are brought from the *Indies;* but as these in themselves are, and have within them, two yellowish grains in two distinct cells, and besides, being they agree in their virtue, figure, looks, and name with the *Bunchum* of *Avicenna*, and *Bunca* of *Rasis ad Almans* exactly; therefore I take them to be the same, until I am better informed by the learned. This liquor is very common among them, wherefore there are a great many of them that sell it, and others that sell the berries, everywhere in their *Batzars*.

The Early Days of Coffee in Italy

It is not easy to determine just when the use of coffee spread from Constantinople to the western parts of Europe; but it is more than likely that the Venetians, because of their close proximity to, and their great

trade with, the Levant, were the first acquainted with it.

Prospero Alpini (Alpinus; 1553 - 1617), a learned physician and botanist of Padua, journeyed to Egypt in 1580, and brought back news of coffee. He was the first to print a description of the coffee plant and drink in his treatise *The Plants of Egypt*, written in Latin, and published in Venice, 1592. He says:

I have seen this tree at Cairo, it being the same tree that produces the fruit, so common in Egypt, to which they give the name *bon* or *ban*. The Arabians and the Egyptians make a sort of decoction of it, which they drink instead of wine; and it is sold in all their public houses, as wine is with us. They call this drink *caova*. The fruit of which they make it comes from "Arabia the Happy," and the tree that I saw looks like a spindle tree, but the leaves are thicker, tougher, and greener. The tree is never without leaves.

Alpini makes note of the medicinal qualities attributed to the drink by dwellers in the Orient, and many of these were soon incorporated into Europe's materia medica.

Johann Vesling (Veslingius; 1598 - 1649), a German botanist and traveler, settled in Venice, where he became known as a learned Italian physician. He edited (1640) a new edition of Alpini's work; but earlier (1638) published some comments on Alpini's findings, in the course of which he distinguished certain qualities found in a drink made from the husks (skins) of the coffee berries from those found in the liquor made from the beans themselves, which he calls the stones of the coffee fruit. He says:

Not only in Egypt is coffee in much request, but in almost all the other provinces of the Turkish Empire. Whence it comes to pass that it is dear even in the Levant and scarce among the Europeans, who by that means are deprived of a very wholesome liquor.

From this we may conclude that coffee was not wholly unknown in Europe at that time. Vesling adds that when he visited Cairo, he found there two or three thousand coffee houses, and that "some did begin to put sugar in their coffee to correct the bitterness of it, and others made sugar-plums of the berries."

Coffee Baptized by the Pope

Shortly after coffee reached Rome, according to a much quoted legend, it was again threatened with religious fanaticism, which almost caused its excommunication from Christendom. It is related that certain priests appealed to Pope Clement VIII (1535 - 1605) to have its use forbidden among Christians, denouncing it as an invention of Satan. They claimed that the Evil One, having forbidden his followers, the infidel Moslems, the use of wine — no doubt because it was sanctified by Christ and used in the Holy Communion — had given them as a substitute this hellish black brew of his which they called coffee. For Christians to drink it was to risk falling into a trap set by Satan for their souls.

AN EIGHTEENTH CENTURY ITALIAN COFFEE HOUSE
After Goldoni, by Zatta

It is further related that the pope, made curious, desired to inspect this Devil's drink, and had some brought to him. The aroma of it was so pleasant and inviting that the pope was tempted to try a cupful. After drinking it, he exclaimed, "Why, this Satan's drink is so delicious that it would be a pity to let the infidels have exclusive use of it. We shall fool Satan by baptizing it, and making it a truly Christian beverage."

Thus, whatever harmfulness its opponents try to attribute to coffee, the fact remains (if we are to credit the story) that it has been baptized and proclaimed unharmful, and a "truly Christian beverage," by his holiness the pope.

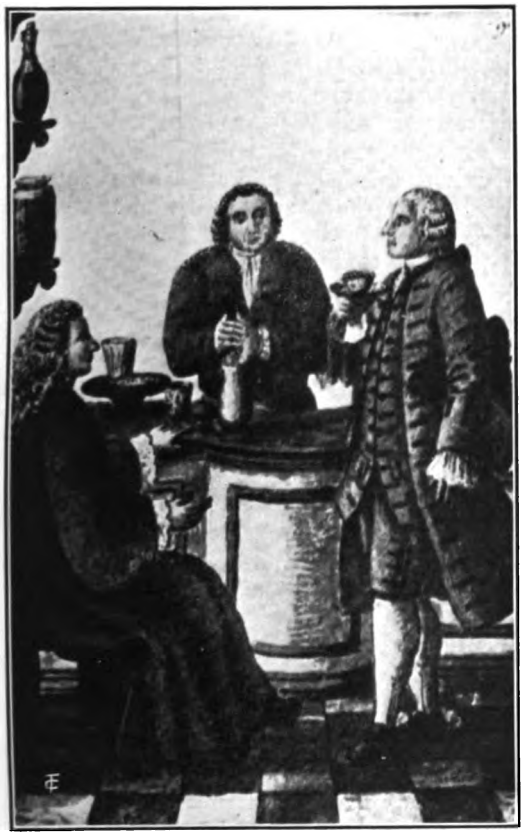
The Venetians had further knowledge of coffee in 1585, when Gianfrancesco Morosini, city magistrate at Constantinople, reported to the Senate that the Turks "drink a black water as hot as they can suffer it, which is the infusion of a bean called *cavee*, which is said to possess the virtue of stimulating mankind."

Dr. A. Couguet, in an Italian review, asserts that Europe's first cup of coffee was sipped in Venice, toward the close of

the sixteenth century. He is of the opinion that the first berries were imported by Mocengio, who was called the *pevere,* because he made a huge fortune trading in spices and others specialties of the Orient.

In 1615 Pierre (Pietro) Della Valle (1586-1652), the well known Italian traveler and author of *Travels in India and Persia,* wrote a letter from Constantinople to his friend Mario Schipano at Venice:

> The Turks have a drink of black color, which during the summer is very cooling, whereas in the winter it heats and warms the body, remaining always the same beverage and not changing its substance. They swallow it hot as it comes from the fire and they drink it in long draughts, not at dinner time, but as a kind of dainty and sipped slowly while talking with one's friends. One cannot find any meetings among them where they drink it not. . . . With this drink, which they call *cahue,* they divert themselves in their conversations. . . . It is made with the grain or fruit of a certain tree called *cahue.* . . . When I return I will bring some with me and I will impart the knowledge to the Italians.



NOBILITY IN AN EARLY VENETIAN CAFFÈ
From the Grevembroch collection in the Museo Civico

Della Valle's countrymen, however, were in a fair way to become well acquainted with the beverage, for already (1615) it had been introduced into Venice. At first it was used largely for medicinal purposes; and high prices were charged for it. Vesling says of its use in Europe as a medicine, "the first step it made from the cabinets of the curious, as an exotic seed, being into the apothecaries' shops as a drug."

The first coffee house in Italy is said to have been opened in 1645, but convincing confirmation is lacking.[1] In the beginning, the beverage was sold with other drinks by lemonade-venders. The Italian word *aquacedratajo* means one who sells lemonade and similar refreshments; also one who sells coffee, chocolate, liquor, etc. Jardin says the beverage was in general use throughout Italy in 1645. It is certain, however, that a coffee shop was opened in Venice in 1683 under the *Procuratie Nuove.* The famous Caffè Florian was opened in Venice by Floriono Francesconi in 1720.

The first authoritative treatise devoted to coffee only appeared in 1671. It was written in Latin by Antoine Faustus Nairon (1635-1707), Maronite professor of the Chaldean and Syrian languages in the College of Rome.

During the latter part of the seventeenth century and the first half of the eighteenth, the coffee house made great progress in Italy. It is interesting to note that this first European adaptation of the Oriental coffee house was known as a *caffè.* The double *f* is retained by the Italians to this day, and by some writers is thought to have been taken from *coffea,* without the double *f* being lost, as in the case of the French and some other Continental forms.

To Italy, then, belongs the honor of having given to the Western world the real coffee house, although the French and Austrians greatly improved upon it. It was not long after its beginning that nearly every shop on the Piazza di San Marco in Venice was a *caffè*[1]. Near the Piazza was the Caffè della Ponte dell' Angelo, where in 1792 died the dog Tabacchio, celebrated by Vincenzo Formaleoni in a satirical eulogy that is a parody of the oration of Ubaldo Bregolini upon the death of Angelo Emo.

In the Caffè della Spaderia, kept by Marco Ancilloto, some radicals proposed to

[1] Molmenti, Pompeo. *La Storia di Venezia nella Vita Privata.* Bergamo, 1908. (pt. 3: p. 245.)

open a reading-room to encourage the spread of liberal ideas. The inquisitors sent a foot-soldier to notify the proprietor that he should inform the first person entering the room that he was to present himself before their tribunal. The idea was thereupon abandoned.

Among other celebrated coffee houses was the one called Menegazzo, from the name of the rotund proprietor, Menico. This place was much frequented by men of letters; and heated discussions were com-

GOLDONI IN A VENETIAN CAFFÈ
From a painting by P. Longhi

mon there between Angelo Maria Barbaro, Lorenzo da Ponte, and others of their time.

The coffee house gradually became the common resort of all classes. In the mornings came the merchants, lawyers, physicians, brokers, workers, and wandering venders; in the afternoons, and until the late hours of the nights, the leisure classes, including the ladies.

For the most part, the rooms of the first Italian *caffè* were low, simple, unadorned, without windows, and only poorly illuminated by tremulous and uncertain lights. Within them, however, joyous throngs passed to and fro, clad in varicolored garments, men and women chatting in groups here and there, and always above the buzz there were to be heard such choice bits of scandal as made worthwhile a visit to the coffee house. Smaller rooms were devoted to gaming.

In the "little square" described by Goldoni[2] in his comedy *The Coffee House*, where the combined barber-shop and gambling house was located, Don Marzio, that marvelous type of slanderous old romancer, is shown as one typical of the period, for Goldoni was a satirist. The other characters of the play were also drawn from the types then to be seen every day in the coffee houses on the Piazza.

In the square of St. Mark's, in the eighteenth century, under the *Procuratie Vecchie*, were the *caffè* Re di Francia, Abbondanza, Pitt. l'eroe, Regina d'Ungheria, Orfeo, Redentore, Coraggio - Speranza, Arco Celeste, and Quadri. The last-named was opened in 1775 by Giorgio Quadri of Corfu, who served genuine Turkish coffee for the first time in Venice.

Under the *Procuratie Nuove* were to be found the *caffè* Angelo Custode, Duca di Toscana, Buon genio - Doge, Imperatore Imperatrice della Russia, Tamerlano, Fontane di Diana, Dame Venete, Aurora Piante d'oro, Arabo - Piastrelle, Pace, Venezia trionfante, and Florian.

Probably no coffee house in Europe has acquired so world-wide a celebrity as that kept by Florian, the friend of Canova the sculptor, and the trusted agent and acquaintance of hundreds of persons in and out of the city, who found him a mine of social information and a convenient city directory. Persons leaving Venice left their cards and itineraries with him; and new-comers inquired at Florian's for tidings of those whom they wished to see. "He long concentrated in himself a knowledge more varied and multifarious than that possessed by any individual before or since," says Hazlitt[3], who has given us this delightful pen picture of *caffè* life in Venice in the eighteenth century:

> Venetian coffee was said to surpass all others, and the article placed before his visitors by Florian was the best in Venice. Of some of the establishments as they then existed, Molmenti has supplied us with illustrations, in one of which Goldoni the dramatist is represented as a visitor, and a female mendicant is soliciting alms.
>
> So cordial was the esteem of the great sculptor Canova for him, that when Florian was

[2] Goldoni, Carlo. *La Bottega di Caffè*. 1750.

[3] Hazlitt, W. Carew. *The Venetian Republic*. London, 1905. (vol. 2: pp. 1012 - 15.)

FLORIAN'S FAMOUS CAFFÈ IN THE PIAZZA DI SAN MARCO, VENICE, NINETEENTH CENTURY

overtaken by gout, he made a model of his leg, that the poor fellow might be spared the anguish of fitting himself with boots. The friendship had begun when Canova was entering on his career, and he never forgot the substantial services which had been rendered to him in the hour of need.

In later days, the Caffè Florian was under the superintendence of a female chef, and the waitresses used, in the case of certain visitors, to fasten a flower in the button-hole, perhaps allusively to the name. In the Piazza itself girls would do the same thing. A good deal of hospitality is, and has ever been, dispensed at Venice in the cafés and restaurants, which do service for the domestic hearth.

There were many other establishments devoted, more especially in the latest period of Venetian independence, to the requirements of those who desired such resorts for purposes of conversation and gossip. These houses were frequented by various classes of patrons — the patrician, the politician, the soldier, the artist, the old and the young — all had their special haunts where the company and the tariff were in accordance with the guests. The upper circles of male society — all above the actually poor — gravitated hither to a man.

For the Venetian of all ranks the coffee house was almost the last place visited on departure from the city, and the first visited on his return. His domicile was the residence of his wife and the repository of his possessions; but only on exceptional occasions was it the scene of domestic hospitality, and rare were the instances when the husband and wife might be seen abroad together, and when the former would invite the lady to enter a café or a confectioner's shop to partake of an ice.

The Caffè Florian has undergone many changes, but it still survives as one of the favorite *caffè* in the Piazza San Marco.

By 1775 coffee-house history had begun to repeat itself in Venice. Charges of immorality, vice, and corruption, were preferred against the *caffè;* and the Council of Ten in 1775, and again in 1776, directed the Inquisitors of State to eradicate these "social cankers." However, they survived all attempts of the reformers to suppress them.

The Caffè Pedrocchi in Padua was another of the early Italian coffee houses that became famous. Antonio Pedrocchi (1776-1852) was a lemonade-vender who, in the hope of attracting the gay youth, the students of his time, bought an old house with the idea of converting the ground floor into a series of attractive rooms. He put all his ready money and all he could borrow into the venture, only to find there were no cellars, indispensable for making ices and beverages on the premises, and that the walls and floors were so old that they crumbled when repairs were started.

He was in despair; but, nothing daunted, he decided to have a cellar dug. What was

his surprise to find the house was built over the vault of an old church, and that the vault contained considerable treasure. The lucky proprietor found himself free to continue his trade of lemonade-vender and coffee-seller, or to live a life of ease. Being a wise man, he adhered to his original plan; and soon his luxurious rooms became the favorite rendezvous for the smart set of his day. In this period lemonade and coffee frequently went together. The Caffè Pedrocchi is considered one of the finest pieces of architecture erected in Italy in the nineteenth century. It was begun in 1816, opened in 1831, and completed in 1842.

Coffee houses were early established in other Italian cities, particularly in Rome, Florence, and Genoa.

In 1764, *Il Caffè*, a purely philosophical and literary periodical, made its appearance in Milan, being founded by Count Pietro Verri (1728-97). Its chief editor was Cesare Beccaria. Its object was to counteract the influence and superficiality of the Arcadians. It acquired its title from the fact that Count Verri and his friends were wont to meet at a coffee house in Milan kept by a Greek named Demetrio. It lived only two years.

Other periodicals of the same name appeared at later periods.

CHAPTER V

THE BEGINNINGS OF COFFEE IN FRANCE

What French travelers did for coffee — The introduction of coffee by P. de la Roque into Marseilles in 1644 — The first commercial importation of coffee from Egypt — The first French coffee house — Failure of the attempt by physicians of Marseilles to discredit coffee — Soliman Aga introduces coffee into Paris — Cabarets à caffe — Celebrated works on coffee by French writers

WE are indebted to three great French travelers for much valuable knowledge about coffee; and these gallant gentlemen first fired the imagination of the French people in regard to the beverage that was destined to play so important a part in the French revolution. They are Tavernier (1605 - 89), Thévenot (1633 - 67), and Bernier (1625 - 88).

Then there is Jean La Roque (1661 - 1745), who made a famous "Voyage to Arabia the Happy" (*Voyage de l'Arabie Heureuse*) in 1708 - 13 and to whose father, P. de la Roque, is due the honor of having brought the first coffee into France in 1644. Also, there is Antoine Galland (1646 - 1715), the French Orientalist, first translator of the *Arabian Nights* and antiquary to the king, who, in 1699, published an analysis and translation from the Arabic of the Abd-al-Kadir manuscript (1587), giving the first authentic account of the origin of coffee.

Probably the earliest reference to coffee in France is to be found in the simple statement that Onorio Belli (Bellus), the Italian botanist and author, in 1596 sent to Charles de l'Écluse (1526 - 1609), a French physician, botanist and traveler, "seeds used by the Egyptians to make a liquid they call *cave*."[1]

P. de la Roque accompanied M. de la Haye, the French ambassador, to Constantinople; and afterward traveled into the Levant. Upon his return to Marseilles in 1644, he brought with him not only some coffee, but "all the little implements used about it in Turkey, which were then looked upon as great curiosities in France." There were included in the coffee service some findjans, or china dishes, and small pieces of muslin embroidered with gold, silver, and silk, which the Turks used as napkins.

Jean La Roque gives credit to Jean de Thévenot for introducing coffee privately into Paris in 1657, and for teaching the French how to use coffee.

De Thévenot writes in this entertaining fashion concerning the use of the drink in Turkey in the middle of the seventeenth century:

> They have another drink in ordinary use. They call it *cahve* and take it all hours of the day. This drink is made from a berry roasted in a pan or other utensil over the fire. They pound it into a very fine powder.
>
> When they wish to drink it, they take a boiler made expressly for the purpose, which they call an *ibrik;* and having filled it with water, they let it boil. When it boils, they add to about three cups of water a heaping spoonful of the powder; and when it boils, they remove it quickly from the fire, or sometimes they stir it, otherwise it would boil over, as it rises very quickly. When it has boiled up thus ten or twelve times, they pour it into porcelain cups, which they place upon a platter of painted wood and bring it to you thus boiling.
>
> One must drink it hot, but in several instalments, otherwise it is not good. One takes it in

[1] Jardin, Édelestan. *Le Caféier et le Café.* Paris, 1895. (p. 16.)

little swallows[2] for fear of burning one's self — in such fashion that in a *cavekane* (so they call the places where it is sold ready prepared), one hears a pleasant little musical sucking sound. . . . There are some who mix with it a small quantity of cloves and cardamom seeds; others add sugar..

It was really out of curiosity that the people of France took to coffee, says Jar-

VOYAGE
DE
L'ARABIE HEUREUSE,
PAR L'OCEAN ORIENTAL,
& le Détroit de la Mer Rouge. Fait par les François pour la premiere fois, dans les années 1708, 1709 & 1710.

AVEC LA RELATION PARTICULIERE d'un Voyage fait du Port de Moka à la Cour du Roy d'Yemen, dans la ſeconde Expedition des années 1711, 1712 & 1713.

UN MEMOIRE CONCERNANT L'ARBRE & le Fruit du Café, dreſſé ſur les Obſervations de ceux qui ont fait ce dernier Voyage. Et un Traité hiſtorique de l'origine & du progrès du Café, tant dans l'Aſie que dans l'Europe; de ſon introduction en France, & de l'établiſſement de ſon uſage à Paris.

A PARIS,
Chez ANDRE' CAILLEAU, ſur le Quay des Auguſtins, près la rue Pavée, à Saint André.

M DCC XVI.
Avec Approbation, & Privilege du Roy.

TITLE PAGE OF LA ROQUE'S WORK, 1716

din; "they wanted to know this Oriental beverage, so much vaunted, although its blackness at first sight was far from attractive."

About the year 1660 several merchants of Marseilles, who had lived for a time in the Levant and felt they were not able to do without coffee, brought some coffee beans home with them; and later, a group of apothecaries and other merchants brought in the first commercial importation of coffee in bales from Egypt. The Lyons merchants soon followed suit, and the use of coffee became general in those parts. In 1671 certain private persons opened a coffee house in Marseilles, near the Exchange, which at once became popular with merchants and travelers. Others started up, and all were crowded. The people did not, however, drink any the less at home. "In fine," says La Roque, "the use of the beverage increased so amazingly that, as was inevitable, the physicians became alarmed, "thinking it would not agree with the inhabitants of a country hot and extremely dry."

The age-old controversy was on. Some sided with the physicians, others opposed them, as at Mecca, Cairo, and Constantinople; only here the argument turned mainly on the medicinal question, the Church this time having no part in the dispute. "The lovers of coffee used the physicians very ill when they met together,

THE COFFEE TREE AS PICTURED BY LA ROQUE IN HIS "VOYAGE DE L'ARABIE HEUREUSE"

and the physicians on their side threatened the coffee drinkers with all sorts of diseases."

Matters came to a head in 1679, when an ingenious attempt by the physicians of

[2] "Drop by drop they take it in," said Cotovicus.

ALL ABOUT COFFEE

A CLOSE-UP OF RIPE COFFEE BERRIES

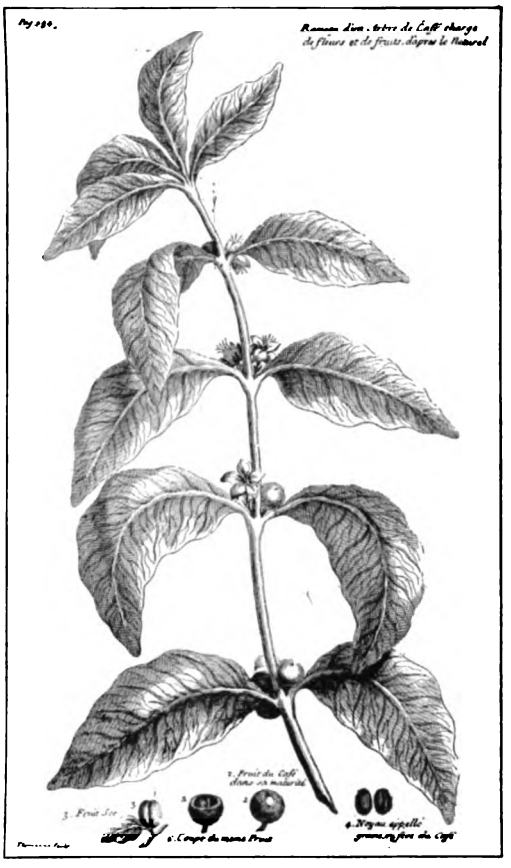
Marseilles to discredit coffee took the form of having a young student, about to be admitted to the College of Physicians, dispute before the magistrate in the town hall, a question proposed by two physicians of the Faculty of Aix, as to whether coffee was or was not prejudicial to the inhabitants of Marseilles.

The thesis recited that coffee had won the approval of all nations, had almost wholly put down the use of wine, although it was not to be compared even with the lees of that excellent beverage; that it was a vile and worthless foreign novelty; that its claim to be a remedy against distempers was ridiculous, because it was not a bean but the fruit of a tree discovered by goats and camels; that it was hot and not cold, as alleged; that it burned up the blood, and so induced palsies, impotence, and leanness; "from all of which we must necessarily conclude that coffee is hurtful to the greater part of the inhabitants of Marseilles."

Thus did the good doctors of the Faculty of Aix set forth their prejudices, and this was their final decision upon coffee. Many thought they overreached themselves in their misguided zeal. They were handled somewhat roughly in the disputation, which disclosed many false reasonings, to say nothing of blunders as to matters of fact. The world had already advanced too far to have another decision against coffee count for much, and this latest effort to stop its onward march was of even less force than the diatribes of the Mohammedan priests. The coffee houses continued to be as much frequented as before, and the people drank no less coffee in their homes. Indeed, the indictment proved a boomerang, for consumption received such an impetus that the merchants of Lyons and Marseilles, for the first time in history, began to import green coffee from the Levant by the ship-load in order to meet the increased demand.

Meanwhile, in 1669, Soliman Aga, the Turkish ambassador from Mohammed IV to the court of Louis XIV, had arrived in Paris. He brought with him a considerable quantity of coffee, and introduced the coffee drink, made in Turkish style, to the French capital.

The ambassador remained in Paris only from July, 1669, to May, 1670, but long enough firmly to establish the custom he had introduced. Two years later, Pascal,



A Coffee Branch With Flowers and Fruit as Illustrated in La Roque's "Voyage de l'Arabie Heureuse"

an Armenian, opened his coffee-drinking booth at the fair of St.-Germain, and this event marked the beginning of the Parisian coffee houses. The story is told in detail in chapter XI.

The custom of drinking coffee having become general in the capital, as well as in Marseilles and Lyons, the example was followed in all the provinces. Every city soon had its coffee houses, and the beverage was largely consumed in private homes. La Roque writes: "None, from the meanest citizen to the persons of the highest quality, failed to use it every morning or at least soon after dinner, it being the custom likewise to offer it in all visits."

"The persons of highest quality" encouraged the fashion of having *cabarets à caffe;* and soon it was said that there could be seen in France all that the East could furnish of magnificence in coffee houses, "the china jars and other Indian furniture

being richer and more valuable than the gold and silver with which they were lavishly adorned."

In 1671 there appeared in Lyons a book entitled *The Most Excellent Virtues of the Mulberry, Called Coffee,* showing the need for an authoritative work on the subject — a need that was ably filled that same year and in Lyons by the publication of Philippe Sylvestre Dufour's admirable treatise, *Concerning the Use of Coffee, Tea, and Chocolate.* Again at Lyons, Dufour published (1684) his more complete work on *The Manner of Making Coffee, Tea, and Chocolate.* This was followed (1715) by the publication in Paris of Jean La Roque's *Voyage de l'Arabie Heureuse,* containing the story of the author's journey to the court of the king of Yemen in 1711, a description of the coffee tree and its fruit, and a critical and historical treatise on its first use and introduction to France.

La Roque's description of his visit to the king's gardens is interesting because it shows the Arabs still held to the belief that coffee grew only in Arabia. Here it is:

There was nothing remarkable in the King's Gardens, except the great pains taken to furnish it with all the kinds of trees that are common in the country; amongst which there were the coffee trees, the finest that could be had. When the deputies represented to the King how much that was contrary to the custom of the Princes of Europe (who endeavor to stock their gardens chiefly with the rarest and most uncommon plants that can be found) the King returned them this answer: That he valued himself as much upon his good taste and generosity as any Prince in Europe; the coffee tree, he told them, was indeed common in his country, but it was not the less dear to him upon that account; the perpetual verdure of it pleased him extremely; and also the thoughts of its producing a fruit which was nowhere else to be met with; and when he made a present of that that came from his own Gardens, it was a great satisfaction to him to be able to say that he had planted the trees that produced it with his own hands.

The first merchant licensed to sell coffee in France was one Damame François, a bourgeois of Paris, who secured the privilege through an edict of 1692. He was given the sole right for ten years to sell coffees and teas in all the provinces and towns of the kingdom, and in all territories under the sovereignty of the king, and received also authority to maintain a warehouse.

To Santo Domingo (1738) and other French colonies the café was soon transported from the homeland, and thrived under special license from the king.

In 1858 there appeared in France a leaflet-periodical, entitled *The Café, Literary, Artistic, and Commercial.* Ch. Woinez, the editor, said in announcing it: "The Salon stood for privilege, the Café stands for equality." Its publication was of short duration.

Chapter VI

THE INTRODUCTION OF COFFEE INTO ENGLAND

The first printed reference to coffee in English — Early mention of coffee by noted English travelers and writers — The Lacedaemonian "black broth" controversy — How Conopios introduced coffee drinking at Oxford — The first English coffee house in Oxford — Two English botanists on coffee

ENGLISH travelers and writers of the sixteenth and seventeenth centuries were quite as enterprising as their Continental contemporaries in telling about the coffee bean and the coffee drink. The first printed reference to coffee in English, however, appears as *chaoua* in a note by a Dutchman, Paludanus, in *Linschoten's Travels,* the title of an English translation from the Latin of a work first published in Holland in 1595 or 1596, the English edition appearing in London in 1598. A reproduction made from a photograph of the original work, with the quaint black-letter German text and the Paludanus notation in roman, is shown herewith.

Hans Hugo (or John Huygen) Van Linschooten (1563 - 1611) was one of the most intrepid of Dutch travelers. In his description of Japanese manners and customs we find one of the earliest tea references. He says:

> Their manner of eating and drinking is: everie man hath a table alone, without table-clothes or napkins, and eateth with two pieces of wood like the men of Chino: they drinke wine of Rice, wherewith they drink themselves drunke, and after their meat they use a certain drinke, which is a pot with hote water, which they drinke as hote as ever they may indure, whether it be Winter or Summer.

Just here Bernard Ten Broeke Paludanus (1550 - 1633), Dutch savant and author, professor of philosophy at the University of Leyden, himself a traveler over the four quarters of the globe, inserts his note containing the coffee reference. He says:

> The Turks holde almost the same manner of drinking of their *Chaona* [1], which they make of certaine fruit, which is like unto the Bakelaer [2], and by the Egyptians called *Bon* or *Ban* [3]: they take of this fruite one pound and a half, and roast them a little in the fire and then sieth them in twenty pounds of water, till the half be consumed away: this drinke they take every morning fasting in their chambers, out of an earthen pot, being verie hote, as we doe here drinke *aquacomposita* [4] in the morning: and they say that it strengtheneth and maketh them warme, breaketh wind, and openeth any stopping.

Van Linschooten then completes his tea reference by saying:

> The manner of dressing their meat is altogether contrarie unto other nations: the aforesaid warme water is made with the powder of a certaine hearbe called *Chaa*, which is much esteemed, and is well accounted among them.

The *chaa* is, of course, tea, dialect *t'eh.*

In 1599, "Sir" Antony (or Anthony) Sherley (1565 - 1630), a picturesque gentleman-adventurer, the first Englishman to mention coffee drinking in the Orient, sailed from Venice on a kind of self-appointed, informal Persian mission, to invite the shah to ally himself with the Christian princes against the Turks, and incidentally, to promote English trade interests in the East. The English government knew nothing of the arrangement, disavowed him, and forbade his return to England. However, the

[1] Misprinted thus in the original Dutch and here Read *Chaoua,* i. e., Arabic *qahwah.*

[2] Laurel berry, of which the taste is bitter and disagreeable. From Latin *bacca lauri.*

[3] Arabic, *bunn*; coffee berries.

[4] *Brandewijn* in original Dutch.

expedition got to Persia; and the account of the voyage thither was written by William Parry, one of the Sherley party, and was published in London in 1601. It is interesting because it contains the first printed reference to coffee in English employing the more modern form of the word. The original reference was photographed for this work in the Worth Library of the British Museum, and is reproduced herewith on page 39.

The passage is part of an account of the manners and customs of the Turks (who, Parry says, are "damned infidells") in Aleppo. It reads:

> They sit at their meat (which is served to them upon the ground) as Tailers sit upon their stalls, crosse-legd; for the most part, passing the day in banqueting and carowsing, untill they surfet, drinking a certaine liquor, which they do call *Coffe*, which is made of seede much like mustard seede, which will soone intoxicate the braine like our Metheglin.[5]

Another early English reference to coffee, wherein the word is spelled "coffa", is in Captain John Smith's book of *Travels and Adventure*, published in 1603. He says of the Turks: "Their best drink is *coffa* of a graine they call *coava*."

This is the same Captain John Smith who in 1607 became the founder of the Colony of Virginia and brought with him to America probably the earliest knowledge of the beverage given to the new Western world.

Samuel Purchas (1527 - 1626), an early English collector of travels, in *Purchas His Pilgrimes*, under the head of "Observations of William Finch, merchant, at Socotra" (Sokotra — an island in the Indian Ocean) in 1607, says of the Arab inhabitants:

> Their best entertainment is a china dish of *Coho*, a blacke bitterish drinke, made of a berry like a bayberry, brought from Mecca, supped off hot, good for the head and stomache.[6]

Still other early and favorite English references to coffee are those to be found in the *Travels* of William Biddulph. This work was published in 1609. It is entitled *The Travels of Certayne Englishmen in Africa, Asia, etc. . . Begunne in* 1600 *and by some of them finished — this yeere* 1608. These references are also reproduced herewith from the black-letter originals in the British Museum (see page 40).

Biddulph's description of the drink, and of the coffee-house customs of the Turks, was the first detailed account to be written by an Englishman. It also appears in *Purchas His Pilgrimes* (1625). But, to quote:

> Their most common drinke is *Coffa*, which is a blacke kinde of drinke, made of a kind of Pulse like Pease, called *Coaua;* which being grownd in the Mill, and boiled in water, they drinke it as hot as they can suffer it; which they finde to agree very well with them against their crudities, and feeding on hearbs and rawe meates. Other compounded drinkes they have, called *Sherbet*, made of Water and Sugar, or Hony, with Snow therein to make it coole; for although the Countrey bee hot, yet they keepe Snow all the yeere long to coole their drinke. It is accounted a great curtesie amongst them to give unto their frends when they come to visit them, a Fin-ion or Scudella of *Coffa*, which is more holesome than toothsome, for it causeth good concoction, and driveth away drowsinesse.
>
> Some of them will also drinke Bersh or Opium, which maketh them forget themselves, and talk idely of Castles in the Ayre, as though they saw Visions, and heard Revelations. Their *Coffa* houses are more common than Ale-houses in England; but they use not so much to sit in the houses, as on benches on both sides the streets, neere unto a Coffa house, every man with his Fin-ionful; which being smoking hot, they use to put it to their Noses & Eares, and then sup it off by leasure, being full of idle and Ale-house talke whiles they are amongst themselves drinking it; if there be any news, it is talked of there.

Among other early English references to coffee we find an interesting one by Sir George Sandys (1577 - 1644), the poet, who gave a start to classical scholarship in America by translating Ovid's *Metamorphoses* during his pioneer days in Virginia. In 1610 he spent a year in Turkey, Egypt, and Palestine, and records of the Turks:[7]

> Although they be destitute of Taverns, yet have they their Coffa-houses, which something resemble them. There sit they chatting most of the day; and sippe of a drinke called Coffa (of the berry that it is made of) in little *China* dishes as hot as they can suffer it: blacke as soote, and tasting not much unlike it (why not that blacke broth which was in use amongst the *Lacedemonians*?) which helpeth, as they say, digestion, and procureth alacrity: many of the Coffa-men keeping beautifull boyes, who serve as stales to procure them customers.

Edward Terry (1590 - 1660), an English traveler, writes, under date of 1616, that many of the best people in India who are strict in their religion and drink no wine at all, "use a liquor more wholesome than pleasant, they call coffee; made by a black Seed boyld in water, which turnes it almost

[5] Mead.
[6] *Purchas His Pilgrimes.* London, 1625.
[7] Sandys, Sir George. *Sandys' Travels.* London, 1673. (p. 66.)

our clokes when we meane to goe abroad vnto the towne or countrie, they put them off when they goe forth, putting on great wyde breeches, and coming home they put them off again, and cast their clokes vpon their shoulders: and as among other nations it is a good sight to see men with white and pearled haire and white teeth, with them it is esteemed the filthiest thing in the world, and seeke by all meanes they may to make their haire and teeth blacke, for that the white causeth their griefe, and the blacke maketh them glad. The like custome is among the women, for as they goe abroad they haue their daughters & maydes before them, and their men seruants come behind, which in Spaigne is cleane contrarie, and when they are great with childe, they tye their girdles so hard about them, that men would thinke they should burst, and when they are not with childe, they weare their girdles so slacke, that you would thinke they would fall from their bodies, saying that by experience they do finde, if they should not doe so, they should haue euill lucke with their fruict, and presently as soone as they are deliuered of their children, in stead of cherishing both the mother and the child with some comfortable meat, they presently wash the childe in cold water, and for a time giue the mother very little to eate, and that of no great substance. Their manner of eating and drinking is: Euerie man hath a table alone, without table-clothes or napkins, and eateth with two peeces of wood, like the men of China: they drinke wine of Rice, wherewith they drink themselues drunke, and after their meat they vse a certaine drinke, which is a pot with hote water, which they drinke as hote as euer they may indure, whether it be Winter or Summer.

Annotat. D. Pall.

The Turkes holde almost the same māner of drinking of their *Chaona*, which they make of certaine fruit, which is like vnto the *Bakelaer*, and by the *Egyptians* called *Bon* or *Ban*: they take of this fruite one pound and a half, and roast them a little in the fire, and then seeth them in twentie poundes of water, till the half be consumed away: this drinke they take euerie morning fasting in their chambers, out of an earthen pot, being verie hote, as we doe here drinke *aquacomposita* in the morning: and they say that it strengtheneth and maketh them warme, breaketh wind, and openeth any stopping.

The manner of dressing their meat is altogether contrarie vnto other nations: the ordinarie hoarse water is made with the powder of a certaine beanbe called Chaa, which is much esteemed, and is well accounted of

among them, and al such as are of any countenance or habilitie haue the said water kept for them in a secret place, and the gentlemen make at themselues, and when they will entertaine any of their friends, they giue him some of that hoarse water to drinke: for the pots wherein they seeth it, and wherein the beanbe is kept, with the earthen cups which they drinke it in, they esteeme as much of them as we doe of Diamants, Rubies and other precious stones, and they are not esteemed for their richnes, but for their olnes, and for that they were made by a good workman: and to know and keepe such by themselues, they take great and speciall care, as also of such as are the valewers of them, and are skilfull in them, as with vs the goldsmith poiseth and valueth siluer and gold, and the Iewellers all kindes of precious stones: so if their pots & cuppes be of an old & excellēt workmās making, they are worth 4 or 5 thousād ducats or more the peece. The King of *Bungo* did giue for such a pot, hauing three feet, 14 thousand ducats, and a Iapan being a Christian in the towne of Sacay, gaue for such a pot 1400 ducats, and yet it had 5 peeces vpon it. They doe likewise esteeme much of any picture or table, wherein is painted a blacke tree, or a blacke bird, and when they knowne it is made of wood, and by an ancient & cunning maister, they giue whatsoeuer you will aske for it. It happeneth some times that such a picture is sold for 3 or 4 thousand ducats and more. They also esteeme much of a good rapier, made by an old and cunning maister, such a one many times costeth 3 or 4 thousand Crowns the peece. These things doe they keepe and esteeme for their Iewels, as we esteeme our Iewels & precious stones: And when we aske them why they esteeme them so much, they aske vs againe, why we esteeme so well of our precious stones & iewels, whereby there is not any profite to be had and serue to no other vse, then only for a shewe, & that their things serue to some end.

Their Iustice and gouernment is as followeth: Their kings are called Iacatay, and are absolutely Lords of the land, notwithstanding they keepe for themselues as much as is necessary for them and their estate, and the rest of their land they deuide among others, which are called Cunixus, which are like our Earles and Dukes: these are appointed by the king, and he causeth them to gouerne & rule the land as it pleaseth him: they are bound to serue the king as well in peace, as in warres, at their owne cost & charges, according to their estate, and the auncient lawes of Iapan. These Cunixus haue others vnder them cal̄ed Toms, which are like our

FIRST PRINTED REFERENCE TO COFFEE IN ENGLISH, 1598

It appears as *Chaona* (*chaoua*) in the second line of the roman text notation by Paludanus

into the same colour, but doth very little alter the taste of the water [!], notwithstanding it is very good to help Digestion, to quicken the Spirits and to cleanse the Blood."

In 1623, Francis Bacon (1561 - 1626), in his *Historia Vitae et Mortis* says: "The Turkes use a kind of herb which they call *caphe"*; and, in 1624, in his *Sylva Sylvarum*[8] (published in 1627, after his death), he writes:

> They have in Turkey a drink called *coffa* made of a berry of the same name, as black as soot, and of a strong scent, but not aromatical; which they take, beaten into powder, in water, as hot as they can drink it: and they take it, and sit at it in their coffa-houses, which are like our taverns. This drink comforteth the brain and heart, and helpeth digestion. Certainly this berry coffa, the root and leaf betel, the leaf tobacco, and the tear of poppy (opium) of which the Turks are great takers (supposing it expelleth all fear), do all condense the spirits, and make them strong and aleger. But it seemeth they were taken after several manners; for coffa and opium are taken down, tobacco but in smoke, and betel is but champed in the mouth with a little lime.

Robert Burton (1577 - 1640), English philosopher and humorist, in his *Anatomy of Melancholy*[9] writes in 1632:

> The Turkes have a drinke called coffa (for they use no wine), so named of a berry as blacke as soot and as bitter (like that blacke drinke which was in use amongst the Lacedemonians and perhaps the same), which they sip still of, and sup as warme as they can suffer; they spend much time in those coffa-houses, which are somewhat like our Ale-houses or Taverns, and there they sit, chatting and drinking, to drive away the time, and to be merry together, because they find, by experience, that kinde of drinke so used, helpeth digestion and procureth alacrity.

Later English scholars, however, found sufficient evidence in the works of Arabian authors to assure their readers that coffee sometimes breeds melancholy, causes headache, and "maketh lean much." One of these, Dr. Pocoke, (1659: see chapter III) stated that, "he that would drink it for livelinesse sake, and to discusse slothfulnesse . . . let him use much sweet meates with it, and oyle of pistaccioes, and butter. Some drink it with milk, but it is an error, and such as may bring in danger of the leprosy." Another writer observed that any ill effects caused by coffee, unlike those of tea, etc., ceased when its use was discontinued. In this connection it is interesting to note that in 1785 Dr. Benjamin Mosely, physician to the Chelsea Hospital, member of the College of Physicians, etc., probably having in mind the popular idea that the Arabic original of the word coffee meant force, or vigor, once expressed the hope that the coffee drink might return to popular favor in England as "a cheap substitute for those enervating teas and beverages which produce the pernicious habit of dram-drinking."

About 1628, Sir Thomas Herbert (1606 - 1681), English traveler and writer, records among his observations on the Persians that:

> "They drink above all the rest *Coho* or *Copha*: by Turk and Arab called *Caphe* and *Cahua*: a drink imitating that in the Stigian lake, black, thick, and bitter: destrain'd from *Bunchy*, *Bunnu*, or Bay berries; wholesome, they say, if hot, for it expels melancholy . . . but not so much regarded for those good properties, as from a Romance that it was invented and brew'd by Gabriel . . . to restore the decayed radical Moysture of kind hearted Mahomet.[10]

In 1634, Sir Henry Blount (1602 - 82), sometimes referred to as "the father of the English coffee house," made a journey on a Venetian galley into the Levant. He was invited to drink *cauphe* in the presence of Amurath IV; and later, in Egypt, he tells of being served the beverage again "in a porcelaine dish". This is how he describes the drink in Turkey:[11]

> They have another drink not good at meat, called *Cauphe*, made of a *Berry* as big as a small *Bean*, dried in a Furnace, and beat to Pouder, of a Soot-colour, in taste a little bitterish, that they seeth and drink as hot as may be endured: It is good all hours of the day, but especially morning and evening, when to that purpose, they entertain themselves two or three hours in *Cauphe-houses*, which in all Turkey abound more than *Inns* and *Ale-houses* with us; it is thought to be the old black broth used so much by the *Lacedemonians*, and dryeth ill Humours in the stomach, comforteth the Brain, never causeth Drunkenness or any other Surfeit, and is a harmless entertainment of good Fellowship; for there upon Scaffolds half a yard high, and covered with Mats, they sit Cross-leg'd after the *Turkish* manner, many times two or three hundred together, talking, and likely with some poor musick passing up and down.

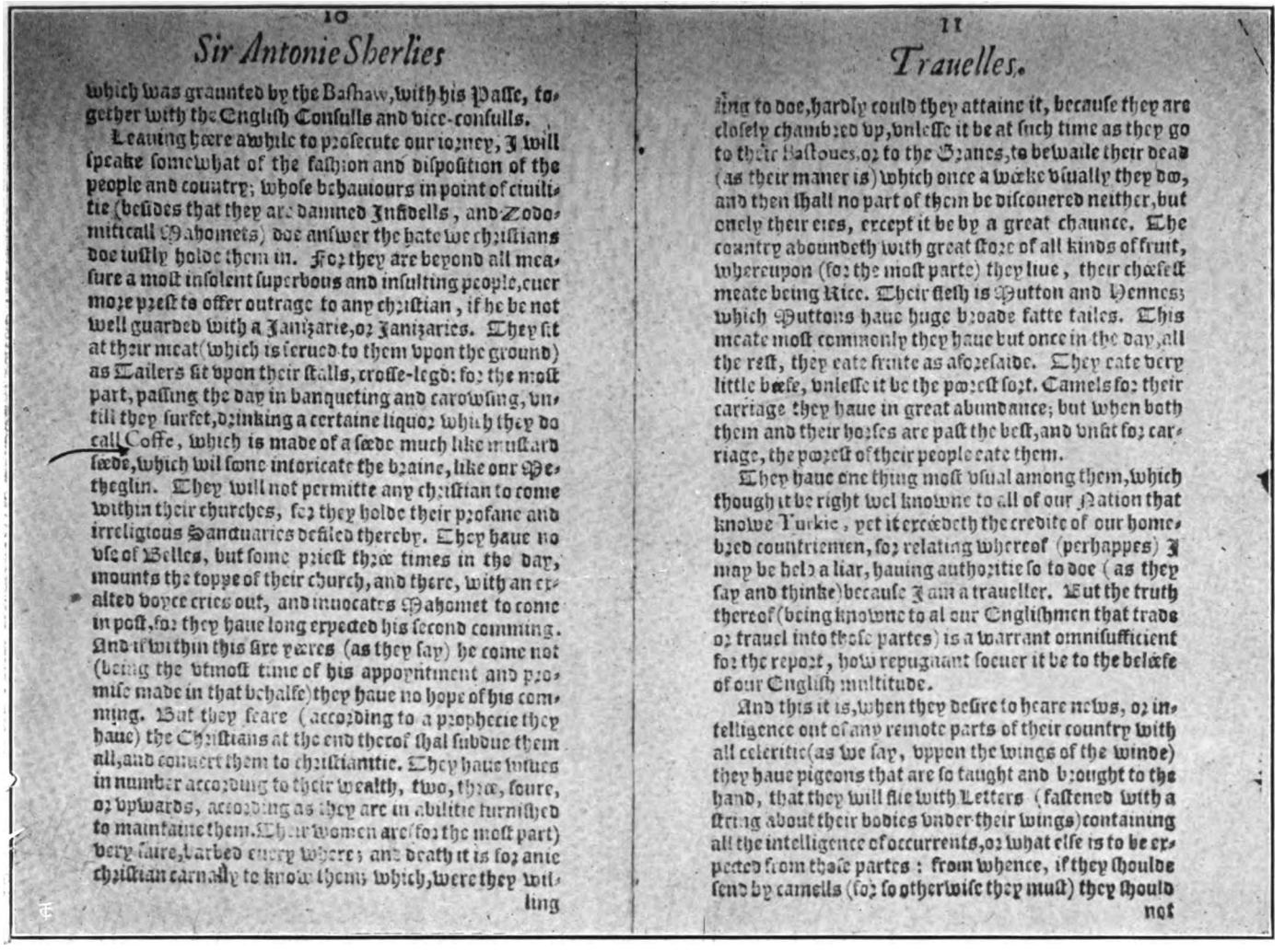
This reference to the Lacedæmonian black broth, first by Sandys, then by Burton,

[8] Bacon, Francis. *Sylva Sylvarum*. London, 1627. (vol. v: p. 26.)

[9] Burton, Robert. *The Anatomy of Melancholy*. Oxford, 1632. (pt. 2: sec. 5: p. 397.) This reference does not appear in the earlier editions of 1621, 24, 28.

[10] Herbert, Sir T. *Travels*. London, ed. 1638. (p. 241.)

[11] Blount, Sir Henry. *A Voyage Into the Levant*. London, 1671. (pp. 20, 21, 54, 55, 138, 139.)



10

Sir Antonie Sherlies

which was graunted by the Bashaw, with his Passe, together with the English Consulls and vice-consulls.

Leaving heere awhile to prosecute our iorney, I will speake somewhat of the fashion and disposition of the people and country; whose behauiours in point of ciuilitie (besides that they are damned Infidells, and Sodomiticall Mahomets) doe answer the hate we christians doe iustly holde them in. For they are beyond all measure a most insolent superbous and insulting people, euer more prest to offer outrage to any christian, if he be not well guarded with a Janizarie, or Janizaries. They sit at their meat (which is serued to them vpon the ground) as Tailers sit vpon their stalls, crosse-legd: for the most part, passing the day in banqueting and carowsing, vntill they surfet, drinking a certaine liquor which they do call Coffe, which is made of a sæde much like mustard sæde, which will some intoxicate the braine, like our Metheglin. They will not permitte any christian to come within their churches, for they holde their profane and irreligious Sanctuaries defiled thereby. They haue no vse of Belles, but some priest three times in the day, mounts the toppe of their church, and there, with an exalted voyce cries out, and inuocates Mahomet to come in post, for they haue long erpected his second comming. And if within this fiue yeares (as they say) he come not (being the vtmost time of his appointment and promise made in that behalfe) they haue no hope of his comming. But they feare (according to a prophecie they haue) the Christians at the end thereof shal subdue them all, and conuert them to christiantie. They haue wiues in number according to their wealth, two, three, foure, or vpwards, according as they are in abilitie furnished to maintaine them. Their women are (for the most part) very faire, barbed euery where; and death it is for anie christian carnally to know them; which, were they willing

11

Trauelles.

ing to doe, hardly could they attaine it, because they are closely chambred vp, vnlesse it be at such time as they go to their Bathoues, or to the Graues, to bewaile their dead (as their maner is) which once a weeke vsually they doe, and then shall no part of them be discouered neither, but onely their eies, except it be by a great chaunce. The country aboundeth with great store of all kinds of fruit, whereupon (for the most parte) they liue, their cheefest meate being Rice. Their flesh is Mutton and Hennes; which Muttons haue huge broade fatte tailes. This meate most commonly they haue but once in the day, all the rest, they eate fruite as aforesaide. They eate very little beefe, vnlesse it be the poorest sort. Camels for their carriage they haue in great abundance; but when both them and their horses are past the best, and vnfit for carriage, the poorest of their people eate them.

They haue one thing most vsual among them, which though it be right wel knowne to all of our Nation that knowe Turkie, yet it exceedeth the credite of our home-bred countriemen, for relating whereof (perhappes) I may be held a liar, hauing authoritie so to doe (as they say and thinke) because I am a trauceller. But the truth thereof (being knowne to al our Englishmen that trade or trauel into those partes) is a warrant omnisufficient for the report, how repugnant soeuer it be to the beleefe of our English multitude.

And this it is, when they desire to heare newes, or intelligence out of any remote parts of their country with all celeritie (as we say, vppon the wings of the winde) they haue pigeons that are so taught and brought to the hand, that they will flie with Letters (fastened with a string about their bodies vnder their wings) containing all the intelligence of occurrents, or what else is to be erpected from those partes: from whence, if they shoulde send by camells (for so otherwise they must) they should not

FIRST PRINTED REFERENCE TO "COFFEE" IN ITS MODERN FORM, 1601

Photographed from the black-letter original of W. Parry's book in the Worth Library of the British Museum

again by Blount, and concurred in by James Howell (1595-1666), the first historiographer royal, gave rise to considerable controversy among Englishmen of letters in later years. It is, of course, a gratuitous speculation. The black broth of the Lacedæmonians was "pork, cooked in blood and seasoned with salt and vinegar."[12]

Although it seems likely that coffee must have been introduced into England sometime during the first quarter of the seventeenth century, with so many writers and travelers describing it, and with so much trading going on between the merchants of the British Isles and the Orient, yet the first reliable record we have of its advent

Their most common drinke is Coffa, which is a blacke kind of drinke made of a kind of Pulse like Pease, called Coaua; which being grownd in the mill, and boiled in water, they drinke it as hot as they can suffer it; which they find to agree very well with them against their crudities and feeding on hearbs and raw meates. Coffa.

It is accounted a great curtesie amongst them to giue vnto their freends when they come to visit them, a Fin-ion or Scudella of Coffa, which is more holesome than toothsome, for it causeth good concoction, and driueth away drowsinesse.

Their Coffa houses are more common than Ale-houses in England; but they vse not so much to sit in the houses as on benches on both sides the streets nere vnto a Coffa house, euery man with his Fin-ion ful; which being smoking hot, they vse to put it to their noses & eares, and then sup it off by leasure, being full of idle and Ale-house talke whiles they are amongst themselues drinking of it; if there be any news, it is talked of there.

REFERENCES TO COFFEE AS FOUND IN BIDDULPH'S TRAVELS 1600
From the black-letter original in the British Museum

William Harvey (1578-1657), the famous English physician who discovered the circulation of the blood, and his brother are reputed to have used coffee before coffee houses came into vogue in London — this must have been previous to 1652. "I remember", says Aubrey[13], "he was wont to drinke coffee; which his brother Eliab did, before coffee houses were the fashion in London." Houghton, in 1701, speaks of "the famous inventor of the circulation of the blood, Dr. Harvey, who some say did frequently use it."

is to be found in the *Diary and Correspondence of John Evelyn, F. R. S.*[14], under "Notes of 1637", where he says:

> There came in my time to the college (Baliol, Oxford) one Nathaniel Conopios, out of Greece, from Cyrill, the Patriarch of Constantinople, who, returning many years after was made (as I understand) Bishop of Smyrna. He was the first I ever saw drink coffee; which custom came not into England till thirty years thereafter.

Evelyn should have said thirteen years after; for then it was that the first coffee-house was opened (1650).

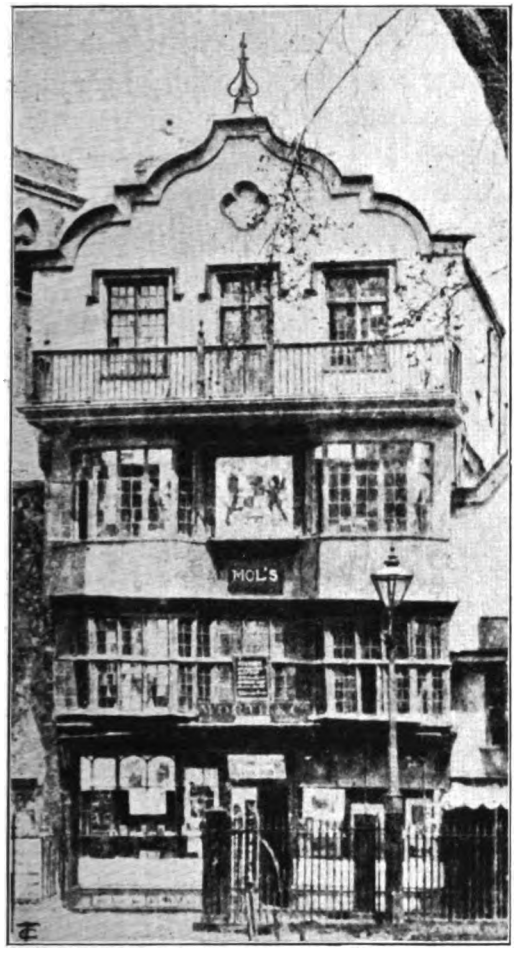
Conopios was a native of Crete, trained in the Greek church. He became *primore*

[12] Gilbert, Gustav. *The Constitutional Antiquities of Sparta and Athens.* London, 1895. (p. 69.)
[13] Aubrey, John. *Lives of Eminent Men.* London, 1813. (vol. ii: pt. 2: pp. 384-85.)
[14] *Works.* (vol. iv: p. 389.)

to Cyrill, Patriarch of Constantinople. When Cyrill was strangled by the vizier, Conopios fled to England to avoid a like barbarity. He came with credentials to Archbishop Laud, who allowed him maintenance in Balliol College.

It was observed that while he continued in Balliol College he made the drink for his own use called Coffey, and usually drank it every morning, being the first, as the antients of that House have informed me, that was ever drank in Oxon.[15]

In 1640 John Parkinson (1567 - 1650), English botanist and herbalist, published



MOL'S COFFEE HOUSE, EXETER, ENGLAND, NOW WORTH'S ART ROOMS

his *Theatrum Botanicum*[16], containing the first botanical description of the coffee plant in English, referred to as "*Arbor Bon cum sua Buna.* The Turkes Berry Drinke".

His work being somewhat rare, it may be of historical interest to quote the quaint description here:

Alpinus, in his Booke of Egiptian plants, giveth us a description of this tree, which as hee saith, hee saw in the garden of a certain Captaine of the *Ianissaries*, which was brought out of *Arabia felix* and there planted as a rarity, never seene growing in those places before.

The tree, saith *Alpinus*, is somewhat like unto the *Evonymus* Pricketimber tree, whose leaves were thicker, harder, and greener, and always abiding greene on the tree; the fruite is called *Buna* and is somewhat bigger then an Hazell Nut and longer, round also, and pointed at the end, furrowed also on both sides, yet on one side more conspicuous than the other, that it might be parted in two, in each side whereof lyeth a small long white kernell, flat on that side they joyne together, covered with a yellowish skinne, of an acid taste, and somewhat bitter withall and contained in a thinne shell, of a darkish ash-color; with these berries generally in *Arabia* and *Egipt*, and in other places of the *Turkes* Dominions, they make a decoction or drinke, which is in the stead of Wine to them, and generally sold in all their tappe houses, called by the name of *Caova; Paludanus* saith *Chaova*, and *Rauwolfius Chaube.*

This drinke hath many good physical properties therein; for it strengtheneth a week stomacke, helpeth digestion, and the tumors and obstructions of the liver and spleene, being drunke fasting for some time together.

In 1650, a certain Jew from Lebanon, in some accounts Jacob or Jacobs by name, in others Jobson[17], opened "at the Angel in the parish of St. Peter in the East", Oxford, the earliest English coffee house and "there it [coffee] was by some who delighted in noveltie, drank". Chocolate was also sold at this first coffee house.

Authorities differ, but the confusion as to the name of the coffee-house keeper may have arisen from the fact that there were two — Jacobs, who began in 1650; and another, Cirques Jobson, a Jewish Jacobite, who followed him in 1654.

The drink at once attained great favor among the students. Soon it was in such demand that about 1655 a society of young students encouraged one Arthur Tillyard, "apothecary and Royalist," to sell "coffey publickly in his house against All Soules College." It appears that a club composed of admirers of the young Charles met at Tillyard's and continued until after the Restoration. This Oxford Coffee Club was the start of the Royal Society.

[15] à Wood, Anthony. *Athenae Oxonienses.* London, 1692. (vol. ii: col. 658.)

[16] Parkinson, John. *Theatrum Botanicum.* London, 1640. (p. 1622.)

[17] D'Israeli, I. *Curiosities of Literature.* London, 1798. (vol. i: p. 345.)

Jacobs removed to Old Southhampton Buildings, London, where he was in 1671.

Meanwhile, the first coffee house in London had been opened by Pasqua Rosée in 1652; and, as the remainder of the story of coffee's rise and fall in England centers around the coffee houses of old London, we shall reserve it for a separate chapter.

Of course, the coffee-house idea, and the use of coffee in the home, quickly spread to other cities in Great Britain; but all the coffee houses were patterned after the London model. Mol's coffee house at Exeter, Devonshire, which is pictured on page 41, was one of the first coffee houses established in England, and may be regarded as typical of those that sprang up in the provinces. It had previously been a noted club house; and the old hall, beautifully paneled with oak, still displays the arms of noted members. Here Sir Walter Raleigh and congenial friends regaled themselves with smoking tobacco. This was one of the first places where tobacco was smoked in England. It is now an art gallery.

When the Bishop of Berytus (Beirut) was on his way to Cochin China in 1666, he reported that the Turks used coffee to correct the indisposition caused in the stomach by the bad water. "This drink," he says, "imitates the effect of wine . . . has not an agreeable taste but rather bitter, yet it is much used by these people for the good effects they find therein."

In 1686, John Ray (1628 - 1704), one of the most celebrated of English naturalists, published his *Universal History of Plants*, notable among other things for being the first work of its kind to extol the virtues of coffee in a scientific treatise.

R. Bradley, professor of botany at Cambridge, published (1714) *A Short Historical Account of Coffee*, all trace of which appears to be lost.

Dr. James Douglas published in London (1727) his *Arbor Yemensis fructum Cofe ferens; or, a description and History of the Coffee Tree*, in which he laid under heavy contribution the Arabian and French writers that had preceded him.

Although they be deſtitute of Tauerns, yet haue they their Coffa-houſes, which ſomething reſemble them. There ſit they chatting moſt of the day; and ſippe of a drinke called Coffa (of the berry that it is made of) in little *China* diſhes, as hot as they can ſuffer it: blacke as ſoote, and taſting not much vnlike it (why not that blacke broth which was in vſe amongſt the *Lacedemonians?*) which helpeth, as they ſay, digeſtion, and procureth alacrity: many of the Coffamen keeping beautifull boyes, who ſerue as ſtales to procure them cuſtomers.

EARLY ENGLISH REFERENCE TO COFFEE BY SIR GEORGE SANDYS
From the seventh edition of *Sandys' Travels*, London, 1673

Chapter VII

THE INTRODUCTION OF COFFEE INTO HOLLAND

How the enterprising Dutch traders captured the first world's market for coffee — Activities of the Netherlands East India Company — The first coffee house at the Hague — The first public auction at Amsterdam in 1711, when Java coffee brought forty-seven cents a pound, green

THE Dutch had early knowledge of coffee because of their dealings with the Orient and with the Venetians, and of their nearness to Germany, where Rauwolf first wrote about it in 1582. They were familiar with Alpini's writings on the subject in 1592. Paludanus, in his coffee note on *Linschoten's Travels,* furnished further enlightenment in 1598.

The Dutch were always great merchants and shrewd traders. Being of a practical turn of mind, they conceived an ambition to grow coffee in their colonial possessions, so as to make their home markets headquarters for a world's trade in the product. In considering modern coffee-trading, the Netherlands East India Company may be said to be the pioneer, as it established in Java one of the first experimental gardens for coffee cultivation.

The Netherlands East India Company was formed in 1602. As early as 1614, Dutch traders visited Aden to examine into the possibilities of coffee and coffee-trading. In 1616 Pieter Van dan Broeck brought the first coffee from Mocha to Holland. In 1640 a Dutch merchant, named Wurffbain, offered for sale in Amsterdam the first commercial shipment of coffee from Mocha. As indicating the enterprise of the Dutch, note that this was four years before the beverage was introduced into France, and only three years after Conopios had privately instituted the breakfast coffee cup at Oxford.

About 1650, Varnar, the Dutch minister resident at the Ottoman Porte, published a treatise on coffee.

When the Dutch at last drove the Portuguese out of Ceylon in 1658, they began the cultivation of coffee there, although the plant had been introduced into the island by the Arabs prior to the Portuguese invasion in 1505. However, it was not until 1690 that the more systematic cultivation of the coffee plant by the Dutch was undertaken in Ceylon.

Regular imports of coffee from Mocha to Amsterdam began in 1663. Later, supplies began to arrive from the Malabar coast.

Pasqua Rosée, who introduced the coffee house into London in 1652, is said to have made coffee popular as a beverage in Holland by selling it there publicly in 1664. The first coffee house was opened in the Korten Voorhout, the Hague, under the protection of the writer Van Essen; others soon followed in Amsterdam and Haarlem.

At the instigation of Nicolaas Witsen, burgomaster of Amsterdam and governor of the East India Company, Adrian Van Ommen, commander of Malabar, sent the first Arabian coffee seedlings to Java in 1696, recorded in the chapter on the history of coffee propagation. These were destroyed by flood, but were followed in 1699 by a second shipment, from which developed the coffee trade of the Netherlands East Indies, that made Java coffee a household word in every civilized country.

A trial shipment of the coffee grown near Batavia was received at Amsterdam in 1706, also a plant for the botanical gardens. This plant subsequently became the progenitor of most of the coffees of the West Indies and America.

The first Java coffee for the trade was received at Amsterdam 1711. The shipment consisted of 894 pounds from the Jakatra plantations and from the interior of the island. At the first public auction, this coffee brought twenty-three and two-thirds *stuivers* (about forty-seven cents) per Amsterdam pound.

The Netherlands East India Company contracted with the regents of Netherlands India for the compulsory delivery of coffee; and the natives were enjoined to cultivate coffee, the production thus becoming a forced industry worked by government. A "general system of cultivation" was introduced into Java in 1832 by the government, which decreed the employment of forced labor for different products. Coffee-growing was the only forced industry that existed before this system of cultivation, and it was the only government cultivation that survived the abolition of the system in 1905-08. The last direct government interest in coffee was closed out in 1918. From 1870 to 1874, the government plantations yielded an average of 844,854 piculs[1] a year; from 1875 to 1878, the average was 866,674 piculs. Between 1879 and 1883, it rose to 987,682 piculs. From 1884 to 1888, the average annual yield was only 629,942 piculs.

Holland readily adopted the coffee house; and among the earliest coffee pictures preserved to us is one depicting a scene in a Dutch coffee house of the seventeenth century, the work of Adriaen Van Ostade (1610-1675), shown on page 586.

History records no intolerance of coffee in Holland. The Dutch attitude was ever that of the constructionist. Dutch inventors and artisans gave us many new designs in coffee mortars, coffee roasters, and coffee serving-pots.

[1] A weight of from 133 to 140 pounds.

CHAPTER VIII

THE INTRODUCTION OF COFFEE INTO GERMANY

The contributions made by German travelers and writers to the literature of the early history of coffee — The first coffee house in Hamburg opened by an English merchant — Famous coffee houses of old Berlin — The first coffee periodical, and the first kaffee-klatsch — Frederick the Great's coffee-roasting monopoly — Coffee persecutions — "Coffee-smellers" — The first coffee king

AS we have already seen, Leonhard Rauwolf, in 1573, made his memorable trip to Aleppo and, in 1582, won for Germany the honor of being the first European country to make printed mention of the coffee drink.

Adam Olearius (or Oelschlager), a German Orientalist (1599 - 1671), traveled in Persia as secretary to a German embassy in 1633 - 36. Upon his return he published an account of his journeys. In it, under date of 1637, he says of the Persians:

> They drink with their tobacco a certain black water, which they call *cahwa*, made of a fruit brought out of Egypt, and which is in colour like ordinary wheat, and in taste like Turkish wheat, and is of the bigness of a little bean. . . . The Persians think it allays the natural heat.

In 1637, Joh. Albrecht von Mandelsloh, in his *Oriental Trip*, mentions "the black water of the Persians called *Kahwe*", saying "it must be drunk hot."

Coffee drinking was introduced into Germany about 1670. The drink appeared at the court of the great elector of Brandenburg in 1675. Northern Germany got its first taste of the beverage from London, an English merchant opening the first coffee house in Hamburg in 1679 - 80. Regensburg followed in 1689; Leipsic, in 1694 · Nuremberg, in 1696; Stuttgart, in 1712; Augsburg, in 1713; and Berlin, in 1721. In that year (1721) King Frederick William I granted a foreigner the privilege of conducting a coffee house in Berlin free of all rental charges. It was known as the English coffee house, as was also the first coffee house in Hamburg. And for many years, English merchants supplied the coffees consumed in northern Germany; while Italy supplied southern Germany.

Other well known coffee houses of old Berlin were, the Royal, in Behren *Strasse*; that of the Widow Doebbert, in the Stech - bahn; the City of Rome, in Unter - den - Linden; Arnoldi, in Kronen *Strasse*; Miercke, in Tauben *Strasse*, and Schmidt, in Post *Strasse*.

Later, Philipp Falck opened a Jewish coffee house in Spandauer *Strasse*. In the time of Frederick the Great (1712 - 1786) there were at least a dozen coffee houses in the metropolitan district of Berlin. In the suburbs were many tents where coffee was served.

The first coffee periodical, *The New and Curious Coffee House*, was issued in Leipsic in 1707 by Theophilo Georgi. The full title was *The New and Curious Coffee House, formerly in Italy but now opened in Germany. First water debauchery. "City of the Well." Brunnenstadt by Lorentz Schoepffwasser* [draw-water] 1707. The second issue gave the name of Georgi as the real publisher. It was intended to be in the nature of an organ for the first real German kaffee-klatsch. It was a chronicle of the comings and goings of the savants

who frequented the "Tusculum" of a well-to-do gentleman in the outskirts of the city. At the beginning the master of the house declared:

I know that the gentlemen here speak French, Italian and other languages. I know also that in many coffee and tea meetings it is considered requisite that French be spoken. May I ask, however, that he who calls upon me should use no other language but German. We are all Germans, we are in Germany; shall we not conduct ourselves like true Germans?

In 1721 Leonhard Ferdinand Meisner published at Nuremberg the first comprehensive German treatise on coffee, tea, and chocolate.

During the second half of the eighteenth century coffee entered the homes, and began to supplant flour-soup and warm beer at breakfast tables.

Meanwhile coffee met with some opposition in Prussia and Hanover. Frederick the Great became annoyed when he saw how much money was paid to foreign coffee merchants for supplies of the green bean, and tried to restrict its use by making coffee a drink of the "quality". Soon all the German courts had their own coffee roasters, coffee pots, and coffee cups.

Many beautiful specimens of the finest porcelain cups and saucers made in Meissen, and used at court fêtes of this period, survive in the collections at the Potsdam and Berlin museums. The wealthy classes followed suit; but when the poor grumbled because they could not afford the luxury, and demanded their coffee, they were told in effect: "You had better leave it alone. Anyhow, it's bad for you because it causes sterility." Many doctors lent themselves to a campaign against coffee, one of their favorite arguments being that women using the beverage must forego child-bearing. Bach's *Coffee Cantata*[1] (1732) was a notable protest in music against such libels.

On September 13, 1777, Frederick issued a coffee and beer manifesto, a curious document, which recited:

It is disgusting to notice the increase in the quantity of coffee used by my subjects, and the amount of money that goes out of the country in consequence. Everybody is using coffee. If possible, this must be prevented. My people must drink beer. His Majesty was brought up on beer, and so were his ancestors, and his officers. Many battles have been fought and won by soldiers nourished on beer; and the King does not believe that coffee-drinking soldiers can be depended upon to endure hardship or to beat his enemies in case of the occurrence of another war.

For a time beer was restored to its honored place; and coffee continued to be a luxury afforded only by the rich. Soon a revulsion of feeling set in; and it was found that even Prussian military rule could not enforce coffee prohibition. Whereupon, in 1781, finding that all his efforts to reserve the beverage for the exclusive court circles, the nobility, and the officers of his army, were vain, the king created a royal monopoly in coffee, and forbade its roasting except in royal roasting establishments. At the same time, he made exceptions in the cases of the nobility, the clergy, and government officials; but rejected all applications for coffee-roasting licenses from the common people. His object, plainly, was to confine the use of the drink to the elect. To these representatives of the cream of Prussian society, the king issued special licenses permitting them to do their own roasting. Of course, they purchased their supplies from the government; and as the price was enormously increased, the sales yielded Frederick a handsome income. Incidentally, the possession of a coffee-roasting license became a kind of badge of membership in the upper class. The poorer classes were forced to get their coffee by stealth; and, failing this, they fell back

RICHTER'S COFFEE HOUSE IN LEIPSIC — SEVENTEENTH CENTURY

upon numerous barley, wheat, corn, chicory, and dried-fig substitutes, that soon appeared in great numbers.

This singular coffee ordinance was known as the "*Déclaration du Roi concernant la*

[1] See chapter XXXII.

COFFEE HOUSE IN GERMANY — MIDDLE OF THE SEVENTEENTH CENTURY

vente du café brûlé'', and was published January 21, 1781.

After placing the coffee *regie* (revenue) in the hands of a Frenchman, Count de Lannay, so many deputies were required to make collections that the administration of the law became a veritable persecution. Discharged wounded soldiers were mostly employed, and their principal duty was to spy upon the people day and night, following the smell of roasting coffee whenever detected, in order to seek out those who might be found without roasting permits. The spies were given one-fourth of the fine collected. These deputies made themselves so great a nuisance, and became so cordially disliked, that they were called "coffee-smellers" by the indignant people.

Taking a leaf out of Frederick's book, the elector of Cologne, Maximilian Frederick, bishop of Münster, (Duchy of Westphalia) on February 17, 1784, issued a manifesto which said:

To our great displeasure we have learned that in our Duchy of Westphalia the misuse of the coffee beverage has become so extended that to counteract the evil we command that four weeks after the publication of this decree no one shall sell coffee roasted or not roasted under a fine of one hundred dollars, or two years in prison, for each offense.

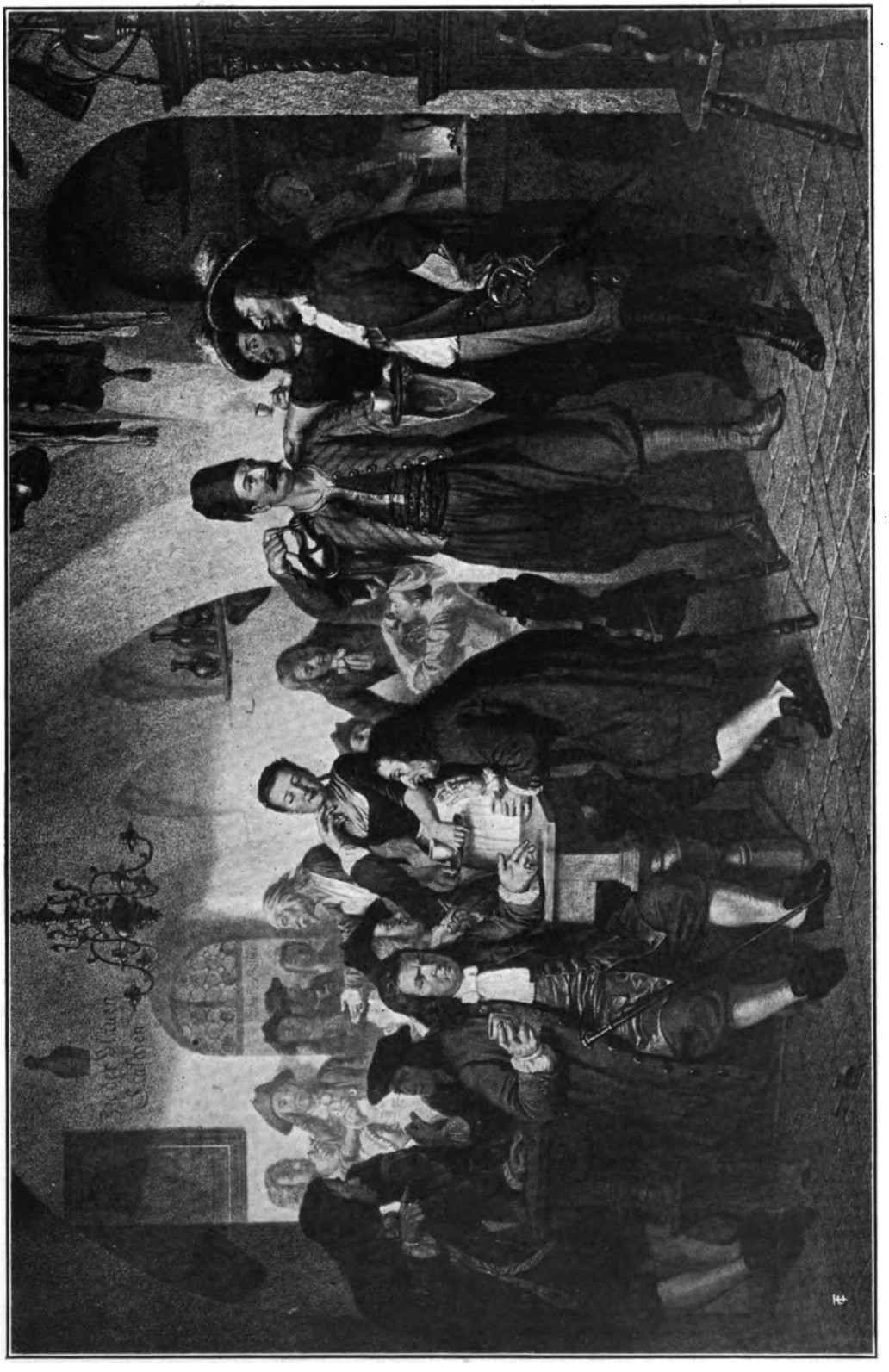
Every coffee-roasting and coffee-serving place shall be closed, and dealers and hotel-keepers are to get rid of their coffee supplies in four weeks. It is only permitted to obtain from the outside coffee for one's own consumption in lots of fifty pounds. House fathers and mothers shall not allow their work people, especially their washing and ironing women, to prepare coffee, or to allow it in any manner under a penalty of one hundred dollars.

All officials and government employees, to avoid a penalty of one hundred gold florins, are called upon closely to follow and to keep a watchful eye over this decree. To the one who reports such persons as act contrary to this decree shall be granted one-half of the said money fine with absolute silence as to his name.

This decree was solemnly read in the pulpits, and was published besides in the usual places and ways. There immediately followed a course of "telling-ons", and of "coffee-smellings", that led to many bitter enmities and caused much unhappiness in the Duchy of Westphalia. Apparently the purpose of the archduke was to prevent persons of small means from enjoying the drink, while those who could afford to purchase fifty pounds at a time were to be permitted the indulgence. As was to be expected, the scheme was a complete failure.

While the king of Prussia exploited his subjects by using the state coffee monopoly as a means of extortion, the duke of Württemberg had a scheme of his own. He sold to Joseph Suess-Oppenheimer, an unscrupulous financier, the exclusive privilege of keeping coffee houses in Württemberg. Suess-Oppenheimer in turn sold the individual coffee-house licenses to the highest bidders, and accumulated a considerable fortune. He was the first "coffee king."

But coffee outlived all these unjust slanders and cruel taxations of too paternal governments, and gradually took its rightful place as one of the favorite beverages of the German people.



KOLSCHITZKY, THE GREAT BROTHER-HEART, IN HIS BLUE BOTTLE CAFÉ, VIENNA, 1683

From a lithograph after the painting by Franz Schams, entitled "Das Erste (Kulczycki'sche) Kaffee Haus"

Chapter IX

TELLING HOW COFFEE CAME TO VIENNA

The romantic adventure of Franz George Kolschitzky, who carried "a message to Garcia" through the enemy's lines and won for himself the honor of being the first to teach the Viennese the art of making coffee, to say nothing of falling heir to the supplies of the green beans left behind by the Turks; also the gift of a house from a grateful municipality, and a statue after death — Affectionate regard in which "brother-heart" Kolschitzky is held as the patron saint of the Vienna kaffeesieder — Life in the early Vienna cafés

A ROMANTIC tale has been woven around the introduction of coffee into Austria. When Vienna was besieged by the Turks in 1683, so runs the legend, Franz George Kolschitzky, a native of Poland, formerly an interpreter in the Turkish army, saved the city and won for himself undying fame, with coffee as his principal reward.

It is not known whether, in the first siege of Vienna by the Turks in 1529, the invaders boiled coffee over their camp fires that surrounded the Austrian capital; although they might have done so, as Selim I, after conquering Egypt in 1517, had brought with him to Constantinople large stores of coffee as part of his booty. But it is certain that when they returned to the attack, 154 years later, they carried with them a plentiful supply of the green beans.

Mohammed IV mobilized an army of 300,000 men and sent it forth under his vizier, Kara Mustapha, (Kuprili's successor) to destroy Christendom and to conquer Europe. Reaching Vienna July 7, 1683, the army quickly invested the city and cut it off from the world. Emperor Leopold had escaped the net and was several miles away. Nearby was the prince of Lorraine, with an army of 33,000 Austrians, awaiting the succor promised by John Sobieski, king of Poland, and an opportunity to relieve the besieged capital. Count Rudiger von Starhemberg, in command of the forces in Vienna, called for a volunteer to carry a message through the Turkish lines to hurry along the rescue. He found him in the person of Franz George Kolschitzky, who had lived for many years among the Turks and knew their language and customs.

On August 13, 1683, Kolschitzky donned a Turkish uniform, passed through the enemy's lines and reached the Emperor's army across the Danube. Several times he made the perilous journey between the camp of the prince of Lorraine and the garrison of the governor of Vienna. One account says that he had to swim the four intervening arms of the Danube each time he performed the feat. His messages did much to keep up the morale of the city's defenders. At length King John and his army of rescuing Poles arrived and were consolidated with the Austrians on the summit of Mount Kahlenberg. It was one of the most dramatic moments in history. The fate of Christian Europe hung in the balance. Everything seemed to point to the triumph of the crescent over the cross. Once again Kolschitzky crossed the Danube, and brought back word concerning the signals that the prince of Lorraine and King John

FRANZ GEORGE KOLSCHITZKY, PATRON SAINT OF VIENNA COFFEE LOVERS

would give from Mount Kahlenberg to indicate the beginning of the attack. Count Starhemberg was to make a sortie at the same time.

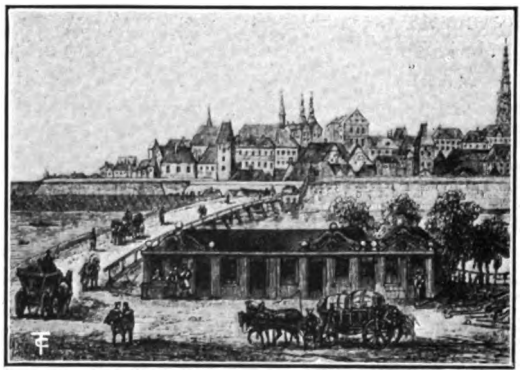
The battle took place September 12, and thanks to the magnificent generalship of King John, the Turks were routed. The Poles here rendered a never - to - be - forgotten service to all Christendom. The Turkish invaders fled, leaving 25,000 tents, 10,000 oxen, 5,000 camels, 100,000 bushels of grain, a great quantity of gold, and many sacks filled with coffee — at that time unknown in Vienna. The booty was distributed; but no one wanted the coffee. They did not know what to do with it; that is, no one except Kolschitzky. He said, "If nobody wants those sacks, I will take them", and every one was heartily glad to be rid of the strange beans. But Kolschitzky knew what he was about, and he soon taught the Viennese the art of preparing coffee. Later, he established the first public booth where Turkish coffee was served in Vienna.

This, then, is the story of how coffee was introduced into Vienna, where was developed that typical Vienna café which has become a model for a large part of the world. Kolschitzky is honored in Vienna as the patron saint of coffee houses. His followers, united in the guild of coffee makers (*kaffee-sieder*), even erected a statue in his honor. It still stands as part of the facade of a house where the Kolschitzygasse merges into the Favoritengasse, as shown in the accompanying picture.

Vienna is sometimes referred to as the "mother of cafés". Café Sacher is world-renowned. Tart à la Sacher is to be found in every cook-book. The Viennese have their "*jause*" every afternoon. When one drinks coffee at a Vienna café one generally has a *kipfel* with it. This is a crescent-shaped roll — baked for the first time in the eventful year 1683, when the Turks besieged the city. A baker made these crescent rolls in a spirit of defiance of the Turk. Holding sword in one hand and *kipfel* in the other, the Viennese would show themselves on top of their redoubts and challenge the cohorts of Mohammed IV.

Mohammed IV was deposed after losing the battle, and Kara Mustapha was executed for leaving the stores — particularly the sacks of coffee beans — at the gates of Vienna; but Vienna coffee and Vienna *kipfel* are still alive, and their appeal is not lessened by the years.

The hero Kolschitzky was presented with a house by the grateful municipality; and



THE FIRST COFFEE HOUSE IN THE LEOPOLDSTADT
From a cut so titled in Bermann's *Alt und Neu Wien*

there, at the sign of the Blue Bottle, according to one account, he continued as a coffee-house keeper for many years.[1] This, in brief, is the story that — although not

[1] Vulcaren. John Peter A. *Relation of the Siege of Vienna.* 1684.

authenticated in all its particulars — is seriously related in many books, and is firmly believed throughout Vienna.

It seems a pity to discredit the hero of so romantic an adventure; but the archives of Vienna throw a light upon Kolschitzky's later conduct that tends to show that, after all, this Viennese idol's feet were of common clay.

It is said that Kolschitzky, after receiving the sacks of green coffee left behind by the Turks, at once began to peddle the beverage from house to house, serving it in little cups from a wooden platter. Later he rented a shop in Bischof-hof. Then he began to petition the municipal council, that, in addition to the sum of 100 ducats already promised him as further recognition of his valor, he should receive a house with good will attached; that is, a shop in some growing business section. "His petitions to the municipal council", writes M. Bermann[2], "are amazing examples of measureless self-conceit and the boldest greed. He seemed determined to get the utmost out of his own self-sacrifice. He insisted upon the most highly deserved reward, such as the Romans bestowed upon their Curtius, the Lacedæmonians upon their Pompilius, the Athenians upon Seneca, with whom he modestly compared himself."

At last, he was given his choice of three houses in the Leopoldstadt, any one of them worth from 400 to 450 gulden, in place of the money reward, that had been fixed by a compromise agreement at 300 gulden. But Kolschitzky was not satisfied with this; and urged that if he was to accept a house in full payment it should be one valued at not less than 1000 gulden. Then ensued much correspondence and considerable haggling. To put an end to the acrimonious dispute, the municipal council in 1685 directed that there should be deeded over to Kolschitzky and his wife, Maria Ursula, without further argument, the house known at that time as 30 (now 8) Haidgasse.

It is further recorded that Kolschitzky sold the house within a year; and, after many moves, he died of tuberculosis, February 20, 1694, aged fifty-four years. He was courier to the emperor at the time of his death, and was buried in the Stefansfreithof Cemetery.

[2] Bermann, M. *Alt und Neu Wien.* Vienna, 1880. (p. 964.)

STATUE OF KOLSCHITZKY ERECTED BY THE COFFEE MAKERS GUILD OF VIENNA

Kolschitzky's heirs moved the coffee house to Donaustrand, near the wooden Schlagbrücke, later known as Ferdinand's *brücke* (bridge). The celebrated coffee house of Franz Mosee (d. 1860) stood on this same spot.

In the city records for the year 1700 a house in the Stock-im-Eisen-Platz (square) is designated by the words "*allwo das erste kaffeegewölbe*" ("here was the first coffee house"). Unfortunately, the name of the proprietor is not given.

Many stories are told of Kolschitzky's popularity as a coffee-house keeper. He is said to have addressed everyone as *bruderherz* (brother-heart) and gradually he himself acquired the name *bruderherz.* A portrait of Kolschitzky, painted about the time of his greatest vogue, is carefully preserved by the Innung der Wiener Kaffeesieder (the Coffee Makers' Guild of Vienna).

Even during the lifetime of the first *kaffee-sieder,* a number of others opened coffee houses and acquired some little fame. Early in the eighteenth century a tourist gives us a glimpse of the progress made by coffee drinking and by the coffee-house idea in Vienna. We read:

The city of Vienna is filled with coffee houses, where the novelists or those who busy themselves with the newspapers delight to meet, to read the gazettes and discuss their contents. Some of these houses have a better reputation than others because such *zeitungs-doctors* (newspaper doctors — an ironical title) gather there to pass most unhesitating judgment on the weightiest events, and to surpass all others in their opinions concerning political matters and considerations.

All this wins them such respect that many congregate there because of them, and to enrich their minds with inventions and foolishness which they immediately run through the city to bring to the ears of the said personalities. It is impossible to believe what freedom is permitted, in furnishing this gossip. They speak without reverence not only of the doings of generals and ministers of state, but also mix themselves in the life of the Kaiser (Emperor) himself.

Vienna liked the coffee house so well that by 1839 there were eighty of them in the city proper and fifty more in the suburbs.

CHAPTER X

THE COFFEE HOUSES OF OLD LONDON

One of the most picturesque chapters in the history of coffee — The first coffee house in London — The first coffee handbill, and the first newspaper advertisement for coffee—Strange coffee mixtures — Fantastic coffee claims—Coffee prices and coffee licenses—Coffee club of the Rota — Early coffee-house manners and customs — Coffee-house keepers' tokens — Opposition to the coffee house — "Penny universities" — Weird coffee substitutes — The proposed coffee-house newspaper monopoly — Evolution of the club — Decline and fall of the coffee house — Pen pictures of coffee-house life — Famous coffee houses of the seventeenth and eighteenth centuries — Some Old World pleasure gardens — Locating the notable coffee houses

THE two most picturesque chapters in the history of coffee have to do with the period of the old London and Paris coffee houses of the seventeenth and eighteenth centuries. Much of the poetry and romance of coffee centers around this time.

"The history of coffee houses," says D'Israeli, "ere the invention of clubs, was that of the manners, the morals and the politics of a people." And so the history of the London coffee houses of the seventeenth and eighteenth centuries is indeed the history of the manners and customs of the English people of that period.

The First London Coffee House

"The first coffee house in London", says John Aubrey (1626 - 97), the English antiquary and folklorist, "was in St. Michael's Alley, in Cornhill, opposite to the church, which was sett up by one . . . Bowman (coachman to Mr. Hodges, a Turkey merchant, who putt him upon it) in or about the yeare 1652. 'Twas about four years before any other was sett up, and that was by Mr. Farr. Jonathan Paynter, over-against to St. Michael's Church, was the first apprentice to the trade, viz., to Bowman."[1]

Another account, for which we are indebted to William Oldys (1696 - 1761), the bibliographer, relates that Mr. Edwards, a London merchant, acquired the coffee habit in Turkey, and brought home with him from Ragusa, in Dalmatia, Pasqua Rosée, an Armenian or Greek youth, who prepared the beverage for him. "But the novelty thereof," says Oldys, "drawing too much company to him, he allowed the said servant with another of his son-in-law to set up the first coffee house in London at St. Michael's Alley, in Cornhill."

From this it would appear that Pasqua Rosée had as partner in this enterprise, the Bowman, who, according to Aubrey, was coachman to Mr. Hodges, the son-in-law of Mr. Edwards, and a fellow merchant traveler.

Oldys tells us that Rosée and Bowman soon separated. John Timbs (1801 - 1875), another English antiquary, says they quarreled, Rosée keeping the house, and his

[1] Manuscript in the Bodleian Library.

partner Bowman obtaining leave to pitch a tent and to sell the drink in St. Michael's churchyard.

Still another version of this historic incident is to be found in *Houghton's Collection*, 1698. It reads:

> It appears that a Mr. Daniel Edwards, an English merchant of Smyrna, brought with him to this country a Greek of the name of Pasqua, in 1652, who made his coffee; this Mr. Edwards married one Alderman Hodges's daughter, who lived in Walbrook, and set up Pasqua for a coffee man in a shed in the churchyard in St. Michael, Cornhill, which is now a scrivener's brave-house, when, having great custom, the ale-sellers petitioned the Lord Mayor against him, as being no freeman. This made Alderman Hodges join his coachman, Bowman, who was free, as Pasqua's partner; but Pasqua, for some misdemeanor, was forced to run the country, and Bowman, by his trade and a contribution of 1000 sixpences, turned the shed to a house. Bowman's apprentices were first, John Painter, then Humphry, from whose wife I had this account.

This account makes it appear that Edwards was Hodges' son-in-law. Whatever the relationship, most authorities agree that Pasqua Rosée was the first to sell coffee publicly, whether in a tent or shed, in London in or about the year 1652. His original shop-bill, or handbill, the first advertisement for coffee, is in the British Museum, and from it the accompanying photograph was made for this work. It sets forth in direct fashion: "The Vertue of the *COFFEE* Drink First publiquely made and sold in England, by *Pasqua Rosée* . . . in St. *Michaels Alley* in *Cornhill*. . . . at the Signe of his own Head."[2]

H. R. Fox Bourne[3] (about 1870) is alone in an altogether different version of this historic event. He says:

"In 1652 Sir Nicholas Crispe, a Levant merchant, opened in London the first coffee house known in England, the beverage being prepared by a Greek girl brought over for the work."

There is nothing to substantiate this story; the preponderance of evidence is in support of the Edwards - Rosée version.

Such then was the advent of the coffee house in London, which introduced to English-speaking people the drink of democracy. Oddly enough, coffee and the Commonwealth came in together. The English coffee house, like its French contemporary, was the home of liberty.

[2] See also chapter XXVIII.
[3] *The Romance of Trade*. London. (chap. II; p. 31.)

Robinson, who accepts that version of the event wherein Edwards marries Hodges's daughter, says that after the partners Rosée and Bowman separated, and Bowman had set up his tent opposite Rosée, a zealous partisan addressed these verses "To Pasqua Rosée, at the Sign of his own Head and half his Body in St. Michael's Alley, next the first Coffee-Tent in London":

> Were not the fountain of my Tears
> Each day exhausted by the steam
> Of your Coffee, no doubt appears
> But they would swell to such a stream
> As could admit of no restriction
> To see, poor Pasqua, thy Affliction.
>
> What! Pasqua, you at first did broach
> This Nectar for the publick Good,
> Must you call Kitt down from the Coach
> To drive a Trade he understood
> No more than you did then your creed,
> Or he doth now to write or read?
>
> Pull Courage, Pasqua, fear no Harms
> From the besieging Foe;
> Make good your Ground, stand to your Arms,
> Hold out this summer, and then tho'
> He'll storm, he'll not prevail — your Face[4]
> Shall give the Coffee Pot the chace.

Eventually Pasqua Rosée disappeared, some say to open a coffee house on the Continent, in Holland or Germany. Bowman, having married Alderman Hodges's cook, and having also prevailed upon about a thousand of his customers to lend him sixpence apiece, converted his tent into a substantial house, and eventually took an apprentice to the trade.

Concerning London's second coffee-house keeper, James Farr, proprietor of the Rainbow, who had as his most distinguished visitor Sir Henry Blount, Edward Hatton[5] says:

> I find it recorded that one James Farr, a barber, who kept the coffee-house which is now the Rainbow, by the Inner Temple Gate (one of the first in England), was in the year 1657, prosecuted by the inquest of St. Dunstan's in the West, for making and selling a sort of liquor called coffe, as a great nuisance and prejudice to the neighborhood, etc., and who would then have thought London would ever have had near three thousand such nuisances, and that coffee would have been, as now, so much drank by the best of quality and physicians?

Hatton evidently attributed Farr's nuisance to the coffee itself, whereas the present-

[4] Pasqua Rosée's sign. Kitt's (or Bowman's) sign was a coffee pot.
[5] Hatton, Edward. *New View of London*. London, 1708. (vol. 1: p. 30.)

The Vertue of the *COFFEE* Drink.

First publiquely made and ſold in England, by *Paſqua Roſee.*

THE Grain or Berry called *Coffee*, groweth upon little Trees, only in the *Deſerts of Arabia.*

It is brought from thence, and drunk generally throughout all the Grand Seigniors Dominions.

It is a ſimple innocent thing, compoſed into a Drink, by being dryed in an Oven, and ground to Powder, and boiled up with Spring water, and about half a pint of it to be drunk, faſting an hour before, and not Eating an hour after, and to be taken as hot as poſsibly can be endured; the which will never fetch the skin off the mouth, or raiſe any Bliſters, by reaſon of that Heat.

The Turks drink at meals and other times, is uſually *Water*, and their Dyet conſiſts much of *Fruit*, the *Crudities* whereof are very much corrected by this Drink.

The quality of this Drink is cold and Dry; and though it be a Dryer, yet it neither *heats*, nor *inflames* more then *hot Poſſet.*

It cloſeth the Orifice of the Stomack, and fortifies the heat within, it's very good to help digeſtion, and therefore of great uſe to be taken about 3 or 4 a Clock afternoon, as well as in the morning.

It cleareth quickens the *Spirits*, and makes the Heart *Lightſome.*

It is good againſt ſore Eys, and the better if you hold your Head over it, and take in the Steem that way.

It ſuppreſſeth Fumes exceedingly, and therefore good againſt the *Head-ach*, and will very much ſtop any *Defluxion of Rheums*, that diſtil from the *Head* upon the *Stomack*, and ſo prevent and help *Conſumptions*, and the *Cough of the Lungs.*

It is excellent to prevent and cure the *Dropſy*, *Gout*, and *Scurvy.*

It is known by experience to be better then any other Drying Drink for *People in years*, or *Children* that have any *running humors* upon them, as *the Kings Evil.* &c.

It is very good to prevent *Miſ-carryings in Child-bearing Women.*

It is a moſt excellent Remedy againſt the *Spleen*, *Hypocondriack Winds*, or the like.

It will prevent *Drowſineſs*, and make one fit for buſines, if one have occaſion to *Watch*, and therefore you are not to Drink of it *after Supper*, unleſs you intend to be *watchful*, for it will hinder ſleep for 3 or 4 hours.

It is obſerved that in Turkey, where this is generally drunk, that they are not troubled with the Stone, Gout, Dropſie, or Scurvey, and that their Skins are exceeding cleer and white.

It is neither *Laxative* nor *Reſtringent.*

Made and Sold in St. *Michaels Alley* in *Cornhill*, by *Paſqua Róſee*, at the Signe of his own Head.

FIRST ADVERTISEMENT FOR COFFEE — 1652

Handbill used by Pasqua Rosée, who opened the first coffee house in London
From the original in the British Museum

ment[6] clearly shows it was in Farr's chimney and not in the coffee.

Mention has already been made that Sir Henry Blount was spoken of as "the father of English coffee houses" and his claim to this distinction would seem to be a valid one, for his strong personality "stamped itself upon the system." His favorite motto, "*Loquendum est cum vulgo, sentiendum cum sapientibus* (the crowd may talk about it; the wise decide it), says Robinson, "expresses well their colloquial purpose, and was natural enough on the lips of one whose experience had been world wide." Aubrey says of Sir Henry Blount, "He is now neer or altogether eighty yeares, his intellectuals good still and body pretty strong."

Women played a not inconspicuous part in establishing businesses for the sale of the coffee drink in England, although the coffee houses were not for both sexes, as in other European countries. The London City *Quaeries* for 1660 makes mention of "a she-coffee merchant." Mary Stringar ran a coffee house in Little Trinity Lane in 1669; Anne Blunt was mistress of one of the Turk's-Head houses in Cannon Street in 1672. Mary Long was the widow of William Long, and her initials, together with those of her husband, appear on a token issued from the Rose tavern in Bridge Street, Covent Garden. Mary Long's token from the "Rose coffee house by the playhouse" in Covent Garden is shown among the group of coffee-house keepers' tokens herein illustrated.

The First Newspaper Advertisement

The first newspaper advertisement for coffee appeared, May 26, 1657, in the *Publick Adviser* of London, one of the first weekly pamphlets. The name of this publication was erroneously given as the *Publick Advertiser* by an early writer on coffee, and the error has been copied by succeeding writers. The first newspaper advertisement was contained in the issue of the *Publick Adviser* for the week of May 19 to May 26, and read:

In *Bartholomew* Lane on the back side of the Old Exchange, the drink called *Coffee*, (which is a very wholsom and Physical drink, having many excellent vertues, closes the Orifice of the Stomack, fortifies the heat within, helpeth Digestion, quickneth the Spirits, maketh the heart lightsom, is good against Eye-sores, Coughs, or Colds, Rhumes, Consumptions, Head-ach, Dropsie, Gout, Scurvy, Kings Evil, and many others is to be sold both in the morning, and at three of the clock in the afternoon.

Chocolate was also advertised for sale in London this same year. The issue of the *Publick Adviser* for June 16, 1657, contained this announcement:

In Bishopgate Street, in Queen's Head Alley, at a Frenchman's house is an excellent West India drink called chocolate, to be sold, where you may have it ready at any time, and also unmade at reasonable rates.

Tea was first sold publicly at Garraway's (or Garway's) in 1657.

Strange Coffee Mixtures

The doctors were loath to let coffee escape from the mysteries of the pharmacopœia and become "a simple and refreshing beverage" that any one might obtain for a penny in the coffee houses, or, if preferred, might prepare at home. In this they were aided and abetted by many well-meaning but misguided persons (some of them men of considerable intelligence) who seemed possessed of the idea that the coffee drink was an unpleasant medicine that needed something to take away its curse, or else that it required a complex method of preparation. Witness "Judge" Walter Rumsey's *Electuary of Cophy*, which appeared in 1657 in connection with a curious work of his called *Organon Salutis: an instrument to cleanse the stomach.*[7] The instrument itself was a flexible whale-bone, two or three feet long, with a small linen or silk button at the end, and was designed to be introduced into the stomach to produce the effect of an emetic. The electuary of coffee was to be taken by the patient before and after using the instrument, which the "judge" called his *Provang*. And this was the "judge's" "new and superior way of preparing coffee" as found in his prescription for making electuary of cophy:

Take equal quantity of Butter and Sallet-oyle, melt them well together, but not boyle them; Then stirre them well that they may incorporate together: Then melt therewith three times as much Honey, and stirre it well together: Then add thereunto powder of Turkish Cophie, to make it a thick Electuary.

A little consideration will convince any one that the electuary was most likely to achieve the purpose for which it was recommended.

[6] The prosecution came under the heading, "Disorders and Annoys."

[7] Rumsey (or Ramsey), W. *Organon Salutis.* London, 1657.

(1)

Numb. 1.

The Publick Adviſer,

WEEKLY

Communicating unto the whole Nation the ſeveral Occaſions of all perſons that are any way concerned in matter of Buying and Selling, or in any kind of Imployment, or dealings whatſoever; according to the intent of the OFFICE OF PUBLICK ADVICE newly ſet up in ſeveral places, in and about *London* and *Weſtminſter*.

For the better Accommodation and Eaſe of the People, and the Univerſal Benefit of the Commonwealth, in point of

PUBLICK INTERCOURSE.

From Tueſday May 19 to Tueſday May 26.

In *Bartholomew* Lane on the back ſide of the Old Exchange, the drink called *Coffee*, (which is a very wholſom and Phyſical drink, having many excellent vertues, cloſes the Orifice of the Stomack, fortifies the heat within, helpeth Digeſtion, quickneth the Spirits, maketh the heart lightſom, is good againſt Eye-ſores, Coughs, or Colds, Rhumes, Conſumptions, Head-ach, Dropſie, Gout, Scurvy, Kings Evil, and many others is to be ſold both in the morning, and at three of the clock in the afternoon.

Artificers.

ONe Mrs. *Lowdel* living at the ſign of the Boot in Fullers Rents in *Holburn*, Attireth and Dreſſeth Ladies and Gentlewomens Heads; and teacheth Maids to [illegible] Heads: Taketh for dreſſing [illegible] till they be [illegible]

THE FIRST NEWSPAPER ADVERTISEMENT FOR COFFEE — 1657

Another concoction invented by the "judge" was known as "wash-brew", and included oatmeal, powder of "cophie", a pint of ale or any wine, ginger, honey, or sugar to please the taste; to these ingredients butter might be added and any cordial powder or pleasant spice. It was to be put into a flannel bag and "so keep it at pleasure like starch." This was a favorite medicine among the common people of Wales.

The book contained in a prefix an interesting historical document in the shape of a letter from James Howell (1595 - 1666) the writer and historiographer, which read:

Touching coffee, I concurre with them in opinion, who hold it to be that black-broth which was us'd of old in Lacedemon, whereof the Poets sing; Surely it must needs be salutiferous, because so many sagacious, and the wittiest sort of Nations use it so much; as they who have conversed with Shashes and Turbants doe well know. But, besides the exsiccant quality it hath to dry up the crudities of the Stomach, as also to comfort the Brain, to fortifie the sight with its steem, and prevent Dropsies, Gouts, the Scurvie, together with the Spleen and Hypocondriacall windes (all which it doth without any violance or distemper at all.) I say, besides all these qualities, 'tis found already, that this Coffee-drink hath caused a greater sobriety among the nations; for whereas formerly Apprentices and Clerks with others, used to take their mornings' draught in Ale, Beer or Wine, which by the dizziness they cause in the Brain, make many unfit for business, they use now to play the Good-fellows in this wakefull and civill drink: Therefore that worthy Gentleman, Mr. Mudiford[8], who introduced the practice hereof first to London, deserves much respect of the whole nation.

The coffee drink at one time was mixed with sugar candy, and also with mustard. In the coffee houses, however, it was usually served black; "few people then mixed it with either sugar or milk."

Fantastic Coffee Claims

One can not fail to note in connection with the introduction of coffee into England that the beverage suffered most from the indiscretions of its friends. On the one hand, the quacks of the medical profession sought to claim it for their own; and, on the other, more or less ignorant laymen attributed to the drink such virtues as its real champions among the physicians never dreamed of. It was the favorite pastime of its friends to exaggerate coffee's merits; and of its enemies, to vilify its users. All this furnished good "copy" for and against the coffee house, which became the central figure in each new controversy.

From the early English author who damned it by calling it "more wholesome than toothsome", to Pasqua Rosée and his contemporaries, who urged its more fantastic claims, it was forced to make its way through a veritable morass of misunderstanding and intolerance. No harmless drink in history has suffered more at hands of friend and foe.

Did its friends hail it as a panacea, its enemies retorted that it was a slow poison. In France and in England there were those who contended that it produced melancholy, and those who argued it was a cure for the same. Dr. Thomas Willis (1621 - 1673), a distinguished Oxford physician whom Antoine Portal (1742 - 1832) called "one of the greatest geniuses that ever lived", said he would sometimes send his patients to the coffee house rather than to the apothecary's shop. An old broadside, described later in this chapter, stressed the notion that if you "do but this Rare ARABIAN cordial use, and thou may'st all the Doctors Slops Refuse."

As a cure for drunkenness its "magic" power was acclaimed by its friends, and grudgingly admitted by its foes. This will appear presently in a description of the war of the broadsides and the pamphlets. Coffee was praised by one writer as a deodorizer. Another (Richard Bradley), in his treatise concerning its use with regard to the plague, said if its qualities had been fully known in 1665, "Dr. Hodges and other learned men of that time would have recommended it." As a matter of fact, in Gideon Harvey's *Advice against the Plague,* published in 1665, we find, "coffee is commended against the contagion."

This is how the drink's sobering virtue was celebrated by the author of the *Rebellious Antidote*:

Come, Frantick Fools, leave off your Drunken fits,
Obsequious be and I'll recall your Wits,
From perfect Madness to a modest Strain
For farthings four I'll fetch you back again,
Enable all your mene with tricks of State,
Enter and sip and then attend your Fate;
Come Drunk or Sober, for a gentle Fee,
Come n'er so Mad, I'll your Physician be.

Dr. Willis, in his *Pharmaceutice Rationalis* (1674), was one of the first to attempt to do justice to both sides of the coffee question. At best, he thought it a somewhat risky beverage, and its votaries must,

[8] Also given as Sir James Muddiford, Murford, Mudford, Moundeford, and Modyford.

in some cases, be prepared to suffer languor and even paralysis; it may attack the heart and cause tremblings in the limbs. On the other hand it may, if judiciously used, prove a marvelous benefit; "being daily drunk it wonderfully clears and enlightens each part of the Soul and disperses all the clouds of every Function."

It was a long time before recognition was obtained for the truth about the "novelty drink"; especially that, if there were any beyond purely social virtues to be found in coffee, they were "political rather than medical."

Dr. James Duncan, of the Faculty of Montpellier, in his book *Wholesome Advice against the Abuse of Hot Liquors,* done into English in 1706, found coffee no more deserving of the name of panacea than that of poison.

George Cheyne (1671 - 1743), the noted British physician, proclaimed his neutrality in the words, "I have neither great praise nor bitter blame for the thing."

Coffee Prices and Coffee Licenses

Coffee, with tea and chocolate, was first mentioned in the English Statute books in 1660, when a duty of four pence was laid upon every gallon made and sold, "to be paid by the maker." Coffee was classed by the House of Commons with "other outlandish drinks."

It is recorded in 1662 that "the right coffee powder" was being sold at the Turk's Head coffee house in Exchange Alley for "4s. to 6s. 8d. per pound; that pounded in a mortar, 2s; East India berry, 1s. 6d.; and the right Turkie berry, well garbled [ground] at 3s. The ungarbled [in the bean] for less with directions how to use the same." Chocolate was also to be had at "2s. 6d. the pound; the perfumed from 4s. to 10s."

At one time coffee sold for five guineas a pound in England, and even forty crowns (about forty-eight dollars) a pound was paid for it.

In 1663, all English coffee houses were required to be licensed; the fee was twelve pence. Failure to obtain a license was punished by a fine of five pounds for every month's violation of the law. The coffee houses were under close surveillance by government officials. One of these was Muddiman, a good scholar and an "arch rogue", who had formerly "written for the Parliament" but who later became a paid spy. L'Estrange, who had a patent on "the sole right of intelligence", wrote in his *Intelligencer* that he was alarmed at the ill effects of "the ordinary written papers of Parliament's news . . . making coffee houses and all the popular clubs judges of those councils and deliberations which they have nothing to do with at all."

The first royal warrant for coffee was given by Charles II to Alexander Man, a Scotsman who had followed General Monk to London, and set up in Whitehall. Here he advertised himself as "coffee man to Charles II."

Owing to increased taxes on tea, coffee, and newspapers, near the end of Queen Anne's reign (1714) coffee-house keepers generally raised their prices as follows: Coffee, two pence per dish; green tea, one and a half pence per dish. All drams, two pence per dram. At retail, coffee was then sold for five shillings per pound; while tea brought from twelve to twenty-eight shillings per pound.

Coffee Club of The Rota

"Coffee and Commonwealth", says a pamphleteer of 1665, "came in together for a Reformation, to make 's a free and sober nation." The writer argues that liberty of speech should be allowed, "where men of differing judgements croud"; and he adds, "that's a coffee-house, for where should men discourse so free as there?" Robinson's comments are apt:

> Now perhaps we do not always connect the ideas of sociableness and freedom of discussion with the days of Puritan rule; yet it must be admitted that something like geniality and openness characterized what Pepys calls the Coffee Club of the Rota. This "free and open Society of ingenious gentlemen" was founded in the year 1659 by certain members of the Republican party, whose peculiar opinions had been timidly expressed and not very cordially tolerated under the Great Oliver. By the weak Government that followed, these views were regarded with extreme dislike and with some amount of terror.

"They met", says Aubrey, who was himself of their number, "at the Turk's Head [Miles's coffee house] in New Palace Yard, Westminster, where they take water, at one Miles's, the next house to the staires, where was made purposely a large ovall table, with a passage in the middle for Miles to deliver his coffee."

Robinson continues:

> This curious refreshment bar and the interest with which the beverage itself was regarded, were quite secondary to the excitement caused

A Coffee House in the Time of Charles II
From a wood cut of 1674

by another novelty. When, after heated disputation, a member desired to test the opinion of the meeting, any particular point might, by agreement, be put to the vote and then everything depended upon "our wooden oracle," the first balloting-box ever seen in England. Formal methods of procedure and the intensely practical nature of the subjects discussed, combined to give a real importance to this Amateur Parliament.

The Rota, or Coffee Club, as Pepys called it, was essentially a debating society for the dissemination of republican opinions. It was preceded only, in the reign of Henry IV, by the club called La Court de Bone Compagnie; by Sir Walter Raleigh's Friday Street, or Bread Street, club; the club at the Mermaid tavern in Bread Street, of which Shakespeare, Beaumont, Fletcher, Raleigh, Selden, Donne, *et al.*, were members; and "rare" Ben Jonson's Devil tavern club, between Middle Temple Gate and Temple Bar.

The Rota derived its name from a plan, which it was designed to promote, for changing a certain number of members of parliament annually by rotation. It was founded by James Harrington, who had painted it in fairest colors in his *Oceana*, that ideal commonwealth.

Sir William Petty was one of its members. Around the table, "in a room every evening as full as it could be crammed," says Aubrey, sat Milton (?) and Marvell, Cyriac Skinner, Harrington, Nevill, and their friends, discussing abstract political questions.

The Rota became famous for its literary strictures. Among these was "The censure of the Rota upon Mr. Milton's book entitled *The ready and easie way to establish a free commonwealth*" (1660), although it is doubtful if Milton was ever a visitor to this "bustling coffee club." The Rota also censured "Mr. Driden's *Conquest of Granada*" (1673).

Early Coffee-House Manners and Customs

Among many of the early coffee-house keepers there was great anxiety that the coffee house, open to high and low, should be conducted under such restraints as might secure the better class of customers from annoyance. The following set of regulations in somewhat halting rhyme was displayed on the walls of several of the coffee houses in the seventeenth century:

The Rules and Orders of the Coffee House.

Enter, Sirs, freely, but first, if you please,
Peruse our civil orders, which are these.
First, gentry, tradesmen, all are welcome hither,
And may without affront sit down together:
Pre-eminence of place none here should mind,
But take the next fit seat that he can find:
Nor need any, if finer persons come,
Rise up to assigne to them his room;
To limit men's expence, we think not fair,
But let him forfeit twelve-pence that shall swear;
He that shall any quarrel here begin,
Shall give each man a dish t' atone the sin;

And so shall he, whose compliments extend
So far to drink in *coffee* to his friend;
Let noise of loud disputes be quite forborne,
No maudlin lovers here in corners mourn,
But all be brisk and talk, but not too much,
On sacred things, let none presume to touch.
Nor profane Scripture, nor sawcily wrong
Affairs of state with an irreverent tongue:
Let mirth be innocent, and each man see
That all his jests without reflection be;
To keep the house more quiet and from blame,
We banish hence cards, dice, and every game;
Nor can allow of wagers, that exceed
Five shillings, which ofttimes much trouble breed;
Let all that's lost or forfeited be spent
In such good liquor as the house doth vent.
And customers endeavour, to their powers,
For to observe still, seasonable hours.
Lastly, let each man what he calls for pay,
And so you're welcome to come every day.

The early coffee houses were often up a flight of stairs, and consisted of a single large room with "tables set apart for divers topics." There is a reference to this in the prologue to a comedy of 1681 (quoted by Malone):

In a coffee house just now among the rabble
I bluntly asked, which is the treason table?

This was the arrangement at Man's and others favored by the wits, the *literati,* and "men of fashionable instincts." In the distinctly business coffee houses separate rooms were provided at a later time for mercantile transactions. The introduction of wooden partitions — wooden boxes, as at a tavern — was also of somewhat later date.

A print of 1674 shows five persons of different ranks in life, one of them smoking, sitting on chairs around a coffee-house table, on which are small basins, or dishes, without saucers, and tobacco pipes, while a coffee boy is serving coffee.

In the beginning, only coffee was dispensed in the English coffee houses. Soon chocolate, sherbert, and tea were added; but the places still maintained their status as social and temperance factors. Constantine Jennings (or George Constantine) of the Grecian advertised chocolate, sherbert and tea at retail in 1664-65; also free instruction in the part of preparing these liquors. "Drams and cordial waters were to be had only at coffee houses newly set up," says Elford the younger, writing about 1689. While some few places added ale and beer as early as 1669, intoxicating liquors were not items of importance for many years.

After the fire of 1666, many new coffee houses were opened that were not limited to a single room up a flight of stairs. Because the coffee-house keepers over-emphasized the sobering qualities of the coffee drink, they drew many undesirable characters from the taverns and ale houses after the nine o'clock closing hour. These were hardly calculated to improve the reputation of the coffee houses; and, indeed, the decline of the coffee houses as a temperance institution would seem to trace back to this attitude of false pity for the victims of tavern vices, evils that many of the coffee houses later on embraced to their own undoing. The early institution was unique, its distinctive features being unlike those of any public house in England or on the Continent. Later on, in the eighteenth century, when these distinctive fea-

A LONDON COFFEE HOUSE OF THE SEVENTEENTH CENTURY
From a wood cut of the period

tures became obscured, the name coffee house became a misnomer.

However, Robinson says, "the close intercourse between the habitués of the coffee house, before it lost anything of its generous social traditions and whilst the issue of the struggle for political liberty was as yet uncertain, was to lead to something

COFFEE HOUSE, QUEEN ANNE'S TIME — 1702-14
Showing coffee pots, coffee dishes, and coffee boy

more than a mere jumbling or huddling together of opposites. The diverse elements gradually united in the bonds of common sympathy, or were forcibly combined by persecution from without until there resulted a social, political and moral force of almost irresistible strength."

Coffee-House Keepers' Tokens

The great London fire of 1666 destroyed some of the coffee houses; but prominent among those that survived was the Rainbow, whose proprietor, James Farr, issued one of the earliest coffee-house tokens, doubtless in grateful memory of his escape. Farr's token shows an arched rainbow emerging from the clouds of the "great fire," indicating that all was well with him, and the Rainbow still radiant. On the reverse the medal was inscribed, "In Fleet Street — His Half Penny."

A large number of these trade coins were put out by coffee-house keepers and other tradesmen in the seventeenth century as evidence of an amount due, as stated thereon, by the issuer to the holder. Tokens originated because of the scarcity of small change. They were of brass, copper, pewter, and even leather, gilded. They bore the name, address, and calling of the issuer, the nominal value of the piece, and some reference to his trade. They were readily redeemed, on presentation, at their face value. They were passable in the immediate neighborhood, seldom reaching farther than the next street. C. G. Williamson writes:

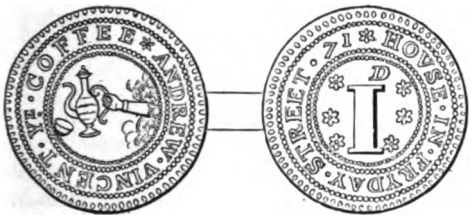
> Tokens are essentially democratic; they would never have been issued but for the indifference of the Government to a public need; and in them we have a remarkable instance of a people forcing a legislature to comply with demands at once reasonable and imperative. Taken as a whole series, they are homely and quaint, wanting in beauty, but not without a curious domestic art of their own.

Robinson finds an exception to the general simplicity in the tokens issued by one of the Exchange Alley houses. The dies of these tokens are such as to have suggested the skilled workmanship of John Roettier. The most ornate has the head of a Turkish sultan at that time famed for his horrible deeds, ending in suicide; its inscription runs:

> Morat ye Great Men did mee call;
> Where Eare I came I conquer'd all.

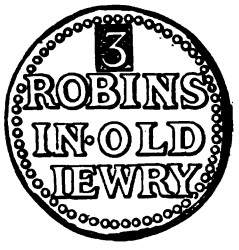
A number of the most interesting coffee-house keepers' tokens in the Beaufoy collection in the Guildhall Museum were photographed for this work, and are shown herewith. It will be observed that many of the traders of 1660-75 adopted as their trade sign a hand pouring coffee from a pot, invariably of the Turkish-ewer pattern. Morat (Amurath) and Soliman were frequent coffee-house signs in the seventeenth century.

J. H. Burn, in his *Catalogue of Traders' Tokens,* recites that in 1672 "divers persons who presumed . . . to stamp, coin, exchange and distribute farthings, halfpence and pence of brass and copper" were "taken into custody, in order to a

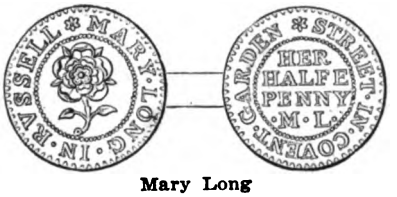


Andrew Vincent
in Friday Street

Morat Ye Great Coffee House
in Exchange Alley



Robins' Coffee House
in Old Jewry

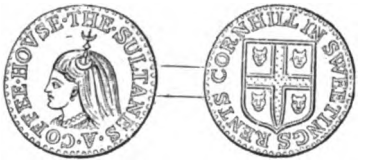


Mary Long
in Russell Street

Union Coffee House
in Cornhill

James Farr, the Rainbow
in Fleet Street

Chapter Coffee House
in Paternoster Row



Sultaness Coffee House
in Cornhill

Achler Brocas
in Exeter

Morat Coffee House
in Exchange Alley

PLATE 1 — COFFEE-HOUSE KEEPERS' TOKENS OF THE 17TH CENTURY

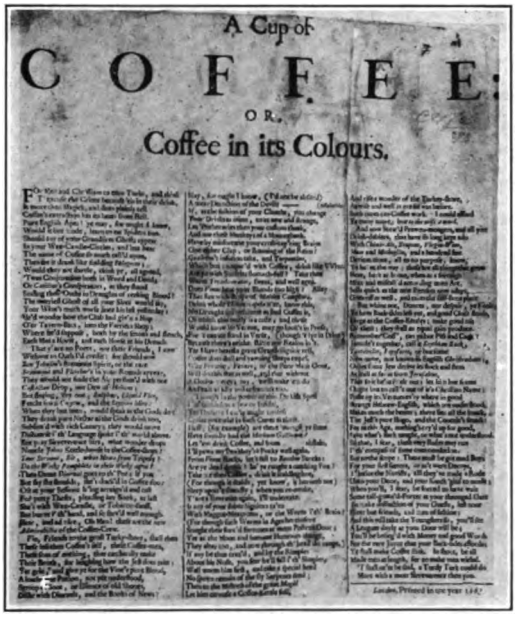
Drawn for this work from the originals in the British Museum, and in the Beaufoy collection at the Guildhall Museum

severe prosecution"; but upon submission, their offenses were forgiven, and it was not until the year 1675 that the private token ceased to pass current.

A royal proclamation at the close of 1674 enjoined the prosecution of any who should "utter base metals with private stamps," or "hinder the vending of those half pence and farthings which are provided for necessary exchange." After this, tokens were issued stamped "necessary change."

Opposition to the Coffee House

It is easy to see why the coffee houses at once found favor among men of intel-


A Cup of
COFFEE:
OR,
Coffee in its Colours.

A BROADSIDE OF 1663

ligence in all classes. Until they came, the average Englishman had only the tavern as a place of common resort. But here was a public house offering a non-intoxicating beverage, and its appeal was instant and universal. As a meeting place for the exchange of ideas it soon attained wide popularity. But not without opposition. The publicans and ale-house keepers, seeing business slipping away from them, made strenuous propaganda against this new social center; and not a few attacks were launched against the coffee drink. Between the Restoration and the year 1675, of eight tracts written upon the subject of the London coffee houses, four have the words "character of a coffee house" as part of their titles. The authors appear eager to impart a knowledge of the town's latest novelty, with which many readers were unacquainted.

One of these early pamphlets (1662) was entitled *The Coffee Scuffle,* and professed to give a dialogue between "a learned knight and a pitifull pedagogue," and contained an amusing account of a house where the Puritan element was still in the ascendant. A numerous company is present, and each little group being occupied with its own subject, the general effect is that of another Babel. While one is engaged in quoting the classics, another confides to his neighbors how much he admires Euclid;

A third's for a lecture, a fourth a conjecture,
A fifth for a penny in the pound.

Theology is introduced. Mask balls and plays are condemned. Others again discuss the news, and are deep in the store of "mercuries" here to be found. One cries up philosophy. Pedantry is rife, and for the most part unchecked, when each 'prentice-boy "doth call for his coffee in Latin" and all are so prompt with their learned quotations that " 't would make a poor Vicar to tremble."

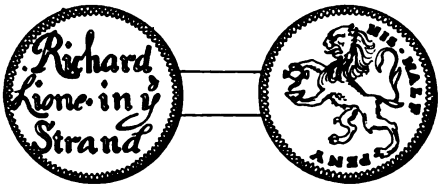
The first noteworthy effort attacking the coffee drink was a satirical broadside that appeared in 1663. It was entitled *A Cup of Coffee: or, Coffee in its Colours.* It said:

For men and Christians to turn Turks, and think
T' excuse the Crime because 'tis in their drink,
Is more than Magick . . .
Pure English Apes! Ye may, for ought I know,
Would it but mode, learn to eat Spiders too.

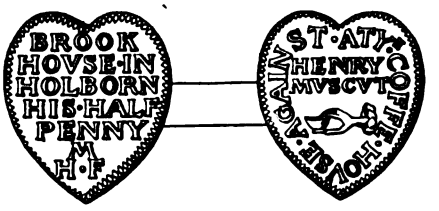
The writer wonders that any man should prefer coffee to canary, and refers to the days of Beaumont, Fletcher, and Ben Jonson. He says:

They drank pure nectar as the gods drink too,
Sublim'd with rich Canary . . .
shall then
These less than coffee's self, these coffee-men,
These sons of nothing, that can hardly make
Their Broth, for laughing how the jest doth take;
Yet grin, and give ye for the Vine's pure Blood
A loathsome potion, not yet understood,
Syrrop of soot, or Essence of old Shooes,
Dasht with Diurnals and the Books of news?

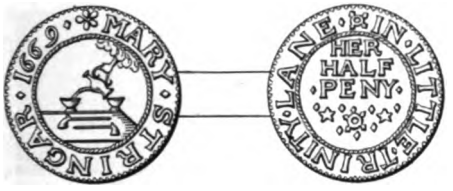
The author of *A Cup of Coffee,* it will be seen, does not shrink from using epithets.



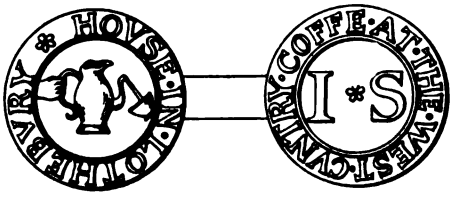
Richard Lione
in the Strand



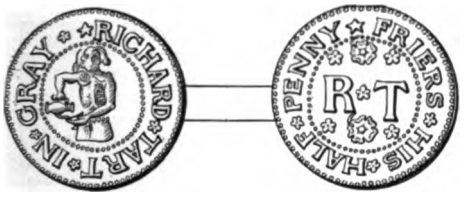
Henry Muscut
opposite Brook House in Holborn



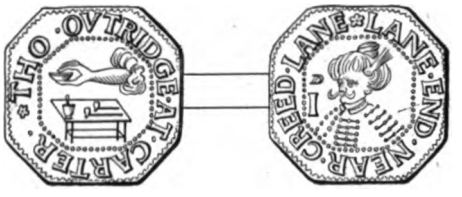
Mary Stringar
in Little Trinity Lane



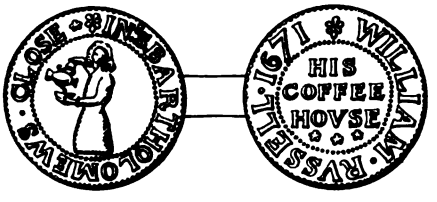
West Country Coffee House
in Lothebury



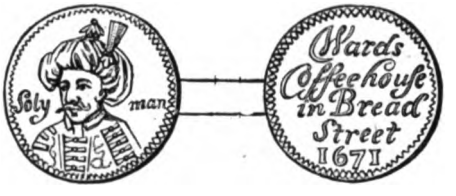
Richard Tart
in Gray Friars, Newgate Street



Thomas Outridge
in Carter Lane End, near Creed Lane

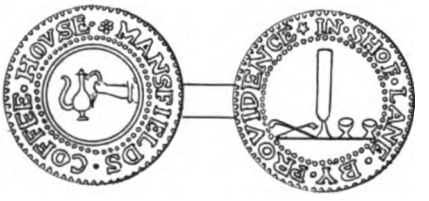


William Russell
in St. Bartholomew's Close, Smithfield



Wärd's Coffee House
in Bread Street

John Marston
in Trumpington Street, Cambridge



Mansfield's Coffee House
in Shoe Lane

PLATE 2—COFFEE-HOUSE KEEPERS' TOKENS OF THE 17TH CENTURY

Drawn for this work from the originals in the British Museum, and in the Beaufoy collection at the Guildhall Museum

The Coffee Man's Granado Discharged upon the Maiden's Complaint Against Coffee, a dialogue in verse, also appeared in 1663.

The Character of a Coffee House, by an Eye and Ear Witness appeared in 1665. It was a ten-page pamphlet, and proved to be excellent propaganda for coffee. It is so well done, and contains so much local color, that it is reproduced here, the text being copied from the original in the British Museum. The title page reads:

The
CHARACTER
OF A
COFFEE-HOUSE
wherein
Is contained a Description of the Persons usually frequenting it, with their Discourse and Humors,
As Also
The Admirable Vertues of
COFFEE
By an Eye and Ear Witness

When Coffee once was vended here,
The Ale'ron shortly did appear,
For our Reformers were such Widgeons.
New Liquors brought in new Religions.

Printed in the Year, 1665.

The text and the arrangement of the body of the pamphlet are as follows:

THE
CHARACTER
OF A
COFFEE-HOUSE

THE DERIVATION OF
A COFFEE-HOUSE

A *Coffee-house*, the learned hold
It is a place where *Coffee's* sold;
This derivation cannot fail us,
For where *Ale's* vended, that's an *Ale-house.*
This being granted to be true,
'Tis meet that next the *Signs* we shew
Both *where* and *how* to find this house
Where men such *cordial broth* carowse.
And if *Culpepper* woon some glory
In turning the *Dispensatory*
From *Latin* into *English;* then
Why should not all good *English men*
Give him much thanks who shews a *cure*
For all diseases men endure?

SIGNS: HOW TO
FIND IT OUT

As you along the streets do trudge,
To take the pains you must not grudge,
To view the Posts or Broomsticks where
The Signs of *Liquors* hanged are.
And if you see the great *Morat*
With Shash on's head instead of hat,
Or any *Sultan* in his dress,
Or picture of a *Sultaness*,
Or *John's* admir'd curled pate,
Or th' great *Mogul* in's Chair of State,
Or *Constantine* the *Grecian*,
Who fourteen years was th' onely man
That made *Coffee* for th' great *Bashaw*,
Although the man he never saw;
Or if you see a *Coffee*-cup
Fil'd from a Turkish pot, hung up
Within the clouds, and round it *Pipes*,
Wax Candles, *Stoppers*, these are types
And certain signs (with many more
Would be too long to write them 'ore.)
Which plainly do Spectators tell
That in that house they *Coffee* sell.
Some wiser than the rest (no doubt,)
Say they can by the smell find't out;
In at a door (say they,) but thrust
Your Nose, and if you scent *burnt Crust*,
Be sure there's *Coffee* sold that's good,
For so by most 'tis understood.
Now being enter'd, there's no needing
Of complements or gentile breeding,
For you may seat you any where,
There's no respect of persons there;
Then comes the *Coffee-man* to greet you,
With welcome Sir, let me entreat you,
To tell me what you'l please to have,
For I'm your humble, humble slave;
But if you ask, what good does Coffee?
He'l answer, Sir, don't think I scoff yee,
If I affirm there's no disease
Men have that drink it but find ease.

THE VERTUES
OF COFFEE

Look, there's a man who takes the steem
In at his Nose, has an extreme
Worm in his pate, and giddiness,
Ask him and he will say no less.
There sitteth one whose Droptick belly
Was hard as flint, now's soft as jelly.
There stands another holds his head
'Ore th' *Coffee*-pot, was almost dead
Even now with Rhume; ask him hee'l say
That all his Rhum's now past away.
See, there's a man sits now demure
And sober, was within this hour
Quite drunk, and comes here frequently,
For 'tis his daily Malady,
More, it has such reviving power
'Twill keep a man awake an houre,
Nay, make his eyes wide open stare
Both Sermon time and all the prayer.
Sir, should I tell you all the rest
O' th' cures 't has done, two hours at least
In numb'ring them I needs must spend,
Scarce able then to make an end.
Besides these vertues that's therein,
For any kind of *Medicine*,
The *Commonwealth-Kingdom* I'd say,
Has mighty reason for to pray
That still *Arabia* may produce
Enough of Berry for it's use:
For't has such strange magnetick force,
That it draws after't great concourse
Of all degrees of persons, even
From high to low, from morn till even;
Especially the *sober Party*,
And News-mongers do drink't most hearty.
Here you'r not thrust into a *Box*
As *Taverns* do to catch the *Fox*,
But as from th' top of *Pauls* high steeple,
Th' whole *City's* view'd, even so all *people*
May here be seen; no secrets are
At th' *Court* for *Peace*, or th' *Camp* for *War*,
But straight they'r here disclos'd and known;
Men in this Age so wise are grown.
Now (Sir) what profit may accrew

By this, to all good men, judge you.
With that he's loudly call'd upon
For *Coffee*, and then whip he's gone.

THE COMPANY

Here at a Table sits (perplext)
A griping *Usurer*, and next
To him a gallant *Furioso*,
Then nigh to him a *Virtuoso;*
A *Player* then (full fine) sits down,
And close to him a *Country Clown.*
O' th' other side sits some *Pragmatick*,
And next to him some sly *Phanatick.*

THE SEVERAL LIQUORS

The gallant he for *Tea* doth call,
The *Usurer* for nought at all.
The *Pragmatick* he doth intreat
That they will fill him some *Beau-cheat*,
The *Virtuoso* he cries hand me
Some *Coffee* mixt with *Sugar-candy.*
Phanaticus (at last) says come,
Bring me some *Aromaticum.*
The *Player* bawls for *Chocolate*,
All which the *Bumpkin* wond'ring at,
Cries, ho, my *Masters*, what d' ye speak,
D' ye call for drink in Heathen Greek?
Give me some good old *Ale* or *Beer*,
Or else I will not drink, I swear.
Then having charg'd their *Pipes* around,

THEIR DISCOURSE

They silence break; First the profound
And sage *Phanatique*, Sirs what news?
Troth says the *Us'rer* I ne'r use
To tip my tongue with such discourse,
'Twere news to know how to disburse
A summ of mony (makes me sad)
To get ought by't, times are so bad.
The other answers, truly Sir
You speak but truth, for I'le aver
They ne'r were worse; did you not hear
What *prodigies* did late appear
At *Norwich, Ipswich, Grantham, Gotam?*
And though prophane ones do not not'em,
Yet we — Here th' *Virtuoso* stops
The current of his speech, with hopes
Quoth he, you will not tak'd amiss,
I say all's lies that's news like this,
For I have Factors all about
The Realm, so that no *Stars* peep out
That are unusual, much less these
Strange and unheard-of *prodigies*
You would relate, but they are tost
To me in letters by first Post.
At which the *Furioso* swears
Such chat as this offends his ears
It rather doth become this Age
To talk of bloodshed, fury, rage,
And t' drink stout healths in brim-fill'd *Nogans.*
To th' downfall of the *Hogan Mogans.*
With that the *Player* doffs his Bonnet,
And tunes his voice as if a Sonnet
Were to be sung; then gently says,
O what delight there is in *Plays!*
Sure if we were but all in *Peace*,
This noise of *Wars* and *News* would cease;
All sorts of people then would club
Their pence to see a Play that's good.
You'l wonder all this while (perhaps)
The *Curioso* holds his chaps.
But he doth in his thoughts devise,
How to the rest he may seem wise;
Yet able longer not to hold,
His tedious tale too must be told,
And thus begins, Sirs unto me
It reason seems that liberty
Of speech and words should be allow'd
Where men of differing judgements croud,
And that's a *Coffee-house*, for where
Should men discourse so free as there?
Coffee and *Commonwealth* begin
Both with one letter, both came in
Together for a *Reformation*,
To make's a free and sober *Nation.*
But now — With that *Phanaticus*
Gives him a nod, and speaks him thus,
Hold brother, I know your intent,
That's no dispute convenient
For this same place, truths seldome find
Acceptance here, they'r more confin'd
To *Taverns* and to *Ale-house* liquor,
Where men do vent their minds more quicker
If that may for a truth but pass
What's said, *In vino veritas.*
With that up starts the *Country Clown*,
And stares about with threatening frown
As if he would even eat them all up.
Then bids the boy run quick and call up,
A *Constable*, for he has reason
To fear their Latin may be *treason*
But straight they all call what's to pay,
Lay't down, and march each several way.

THE COMPANY

At th' other table sits a Knight,
And here *a grave old man* ore right
Against his *worship*, then perhaps
That *by* and *by* a *Drawer* claps
His bum close by them, there down squats
A dealer in old shoes and hats;
And here withouten any panick
Fear, dread or care a bold *Mechanick.*

THEIR DISCOURSE

The *Knight* (because he's so) he prates
Of matters far beyond their pates.
The grave old man he makes a bustle,
And his wise sentence in must justle.
Up starts th' *Apprentice boy* and he
Says boldly so and so't must be.
The dealer in old shoes to utter
His saying too makes no small sputter.
Then comes the pert *mechanick blade*,
And contradicts what all have said.

* * *

There by the fier-side doth sit,
One freezing in an *Ague* fit.
Another poking in't with th' tongs,
Still ready to cough up his lungs
Here sitteth one that's melancolick,
And there one singing in a frolick.
Each one hath such a prety gesture,
At Smithfield fair would yield a tester.
Boy reach a pipe cries he that shakes,
The songster no Tobacco takes,
Says he who coughs, nor do I smoak.
Then *Monsieur Mopus* turns his cloak
Off from his face, and with a grave
Majestick beck his pipe doth crave.
They load their guns and fall a smoaking
Whilst he who coughs sits by a choaking,
Till he no longer can abide.
And so removes from th' fier side.
Now all this while none calls to drink,
Which makes the *Coffee boy* to think

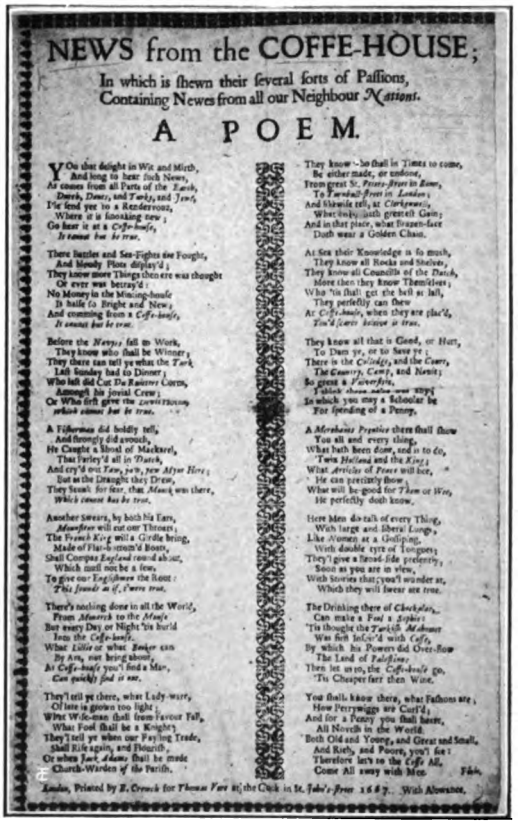
Much they his pots should so enclose,
He cannot pass but tread on toes.
With that as he the *Nectar* fills
From pot to pot, some on't he spills
Upon the *Songster*. Oh cries he.
Pox, what dost do? thou'st burnt my knee;
No says the boy, (to make a bald
And blind excuse.) *Sir 'twill not scald.*
With that the man lends him a cuff
O' th' ear, and whips away in snuff.
The other two, their pipes being out,
Says *Monsieur Mopus* I much doubt
My friend I wait for will not come,
But if he do, say I'm gone home.
Then says the *Aguish man* I must come
According to my wonted custome,
To give ye' a visit, although now
I dare not drink, and so *adieu.*
The boy replies, O Sir, however
You'r very welcome, we do never
Our *Candles, Pipes* or *Fier* grutch
To daily customers and such,
They'r *Company* (without expence,)
For that's sufficient recompence.
Here at a table all alone,
Sits (studying) *a spruce youngster.* (one
Who doth conceipt himself fully witty,
And's counted *one o' th' wits o' th' City,*)
Till by him (with a stately grace,)
A Spanish *Don* himself doth place.
Then (cap in hand) a brisk *Monsieur*
He takes his seat, and crowds as near
As possibly that he can come.
Then next a *Dutchman* takes his room.
The Wits glib tongue begins to chatter,
Though't utters more of noise than matter,
Yet 'cause they seem to mind his words,
His lungs more battle still affords
At last says he to *Don*, I trow
You understand me? *Sennor no*
Says th' other. Here the Wit doth pause
A little while, then opes his jaws,
And says to *Monsieur*, you enjoy
Our tongue I hope? *Non par ma foy,*
Replies the *Frenchman*: nor you, Sir?
Says he to th' *Dutchman, Neen mynheer,*
With that he's gone, and cries, why sho'd
He stay where *wit's* not understood?
There in a place of his own chusing
(Alone) some *lover* sits a musing,
With arms across, and's eyes up lift,
As if he were of sence bereft,
Till sometimes to himself he's speaking,
Then sighs as if his heart were breaking.
Here in a corner sits a *Phrantick,*
And there stands by a frisking Antick,
Of all sorts some and all conditions
Even *Vintners, Surgeons* and *Physicians.*
The *blind*, the *deaf*, and *aged cripple*
Do here resort and Coffee tipple.

Now here (perhaps) you may expect
My *Muse* some trophies should erect
In high flown verse, for to set forth
The *noble praises* of its *worth.*

Truth is, *old Poets* beat their brains
To find out high and lofty strains
To praise the (now too frequent) use
Of the bewitching *grapes strong juice,*
Some have strain'd hard for to exalt
The *liquor* of our *English Mault*
Nay *Don* has almost crackt his *nodle*
Enough t' applaud his *Caaco Caudle.*
The *Germans Mum, Teag's Usquebagh,*
(Made him so well defend *Tredagh,*)
Metheglin, which the *Brittains* tope,
Hot *Brandy* wine, the *Hogans* hope.
Stout *Meade* which makes the *Russ* to laugh,
Spic'd *Punch* (in bowls,) the *Indians quaff.*
All these have had their pens to raise
Them *Monuments* of lasting praise,
Onely poor *Coffee* seems to me
No subject fit for *Poetry*
At least 'tis one that none of mine is,
So I do wave 't, and here write—

FINIS.

News from the Coffe House; in which is shewn their several sorts of Passions ap-



NEWS from the COFFE-HOUSE;

In which is shewn their several sorts of Passions, Containing Newes from all our Neighbour Nations.

A POEM.

A BROADSIDE OF 1667

peared in 1667. It was reprinted in 1672 as *The Coffee House or Newsmongers' Hall.*

Several stanzas from these broadsides have been much quoted. They serve to throw additional light upon the manners of the time, and upon the kind of conversation met with in any well frequented coffee house of the seventeenth century, particularly under the Stuarts. They are finely descriptive of the company char-

acteristics of the early coffee houses. The fifth stanza of the edition of 1667, inimical to the French, was omitted when the broadside was amended and reprinted in 1672, the year that England joined with France and again declared war on the Dutch. The following verses with explanatory notes are from Timbs:

NEWS FROM THE COFFE HOUSE

You that delight in Wit and Mirth,
  And long to hear such News,
As comes from all Parts of the *Earth*,
  Dutch, Danes, and *Turks*, and *Jews*,
I'le send yee to a Rendezvouz,
  Where it is smoaking new;
Go hear it at a *Coffe-house*,
  It cannot but be true.

There Battles and Sea-Fights are Fought,
  And bloudy Plots display'd;
They know more Things then ere was thought
  Or ever was betray'd:
No Money in the Minting-house
  Is halfe so Bright and New;
And comming from a *Coffe-house*
  It cannot but be true.

Before the *Navyes* fall to Work,
  They know who shall be Winner;
They there can tell ye what the *Turk*
  Last *Sunday* had to Dinner;
Who last did Cut *Du Ruitters*[9] Corns,
  Amongst his jovial Crew;
Or Who first gave the *Devil* Horns,
  Which cannot but be true.

A *Fisherman* did boldly tell,
  And strongly did avouch,
He Caught a Shoal of Mackarel,
  That Parley'd all in *Dutch*,
And cry'd out *Yaw, yaw, yaw Myne Here;*
  But as the Draught they Drew
They Stunck for fear, that *Monck*[10] *was there*,
  Which cannot but be true.

* * *

There's nothing done in all the World,
  From *Monarch* to the *Mouse*
But every Day or Night 'tis hurld
  Into the *Coffe-house.*
What *Lillie*[11] or what *Booker*[12] can
  By Art, not bring about,
At *Coffe-house* you'l find a Man,
  Can quickly find it out.

They know who shall in Times to come,
  Be either made, or undone,
From great *St. Peters street* in *Rome*,
  To *Turnbull-street*[13] in *London;*

* * *

They know all that is Good, or Hurt,
  To Dam ye, or to Save ye;
There is the *Colledge*, and the *Court*,
  The *Country, Camp* and *Navie;*
So great a *Universitie*,
  I think there ne're was any;
In which you may a Schoolar be
  For spending of a Penny.

* * *

Here Men do talk of every Thing,
  With large and liberal Lungs,
Like Women at a Gossiping,
  With double tyre of Tongues;
They'l give a Broad-side presently,
  Soon as you are in view,
With Stories that, you'l wonder at,
  Which they will swear are true.

The Drinking there of *Chockalat*,
  Can make a *Fool* a *Sophie*:
'Tis thought the *Turkish Mahomet*
  Was first Inspir'd with *Coffe*,
By which his Powers did Over-flow
  The Land of *Palestine*:
Then let us to, the *Coffe-house* go,
  'Tis Cheaper farr then Wine.

You shall know there, what Fashions are;
  How Perrywiggs are Curl'd;
And for a Penny you shall heare,
  All Novells in the World.
Both Old and Young, and Great and Small,
  And Rich, and Poore, you'l see;
Therefore let's to the *Coffe* All,
  Come All away with Mee.

FINIS.

Robert Morton made a contribution to the controversy in *Lines Appended to the Nature, Quality and Most Excellent Vertues of Coffee* in 1670.

There was published in 1672 *A Broadside Against Coffee, or the Marriage of the Turk,* verses that attained considerable fame because of their picturesque invective. They also stressed the fact that Pasqua Rosée's partner was a coachman,

[9] The Dutch admiral who, in June, 1667, dashed into the Downs with a fleet of eighty "sail", and many "fire-ships", blocked up the mouths of the Medway and Thames, destroyed the fortifications at Sheerness, cut away the paltry defenses of booms and chains drawn across the rivers, and got to Chatham, on the one side, and nearly to Gravesend on the other, the king having spent in debauchery the money voted by Parliament for the proper support of the English navy.

[10] General Monk and Prince Rupert were at this time commanders of the English fleet.

[11] Lillie (Lilly) was the celebrated astrologer of the Protectorate, who earned great fame at that time by predicting, in June, 1645, "if now we fight, a victory stealeth upon us;" a lucky guess, signally verified in the King's defeat at Naseby. Lilly thenceforth always saw the stars favourable to the Puritans.

[12] This man was originally a fishing-tackle maker in Tower Street during the reign of Charles I; but turning enthusiast, he went about prognosticating "the downfall of the King and Popery;" and as he and his predictions were all on the popular side, he became a great man with the superstitious "godly brethren" of that day.

[13] Turnball, or Turnbull-street, as it is still called, had been for a century previous of infamous repute. In Beaumont and Fletcher's play, the *Knight of the Burning Pestle*, one of the ladies who is undergoing penance at the barber's, has her character sufficiently pointed out to the audience, in her declaration, that she had been "stolen from her friends in Turnball-street."

Nature, Quality, and Most Excellent Vertues OF COFFEE

A BROADSIDE OF 1670

and imitated the broken English of the Ragusan youth:

A BROAD-SIDE AGAINST COFFEE;
OR, THE
MARRIAGE OF THE TURK

Coffee, a kind of *Turkish Renegade*,
Has late a match with *Christian water* made;
At first between them happen'd a Demur,
Yet joyn'd they were, but not without great *stir;*

* * *

Coffee was cold as *Earth*, *Water* as *Thames*,
And stood in need of recommending Flames;

* * *

Coffee so brown as berry does appear,
Too swarthy for a Nymph so fair, so clear:

* * *

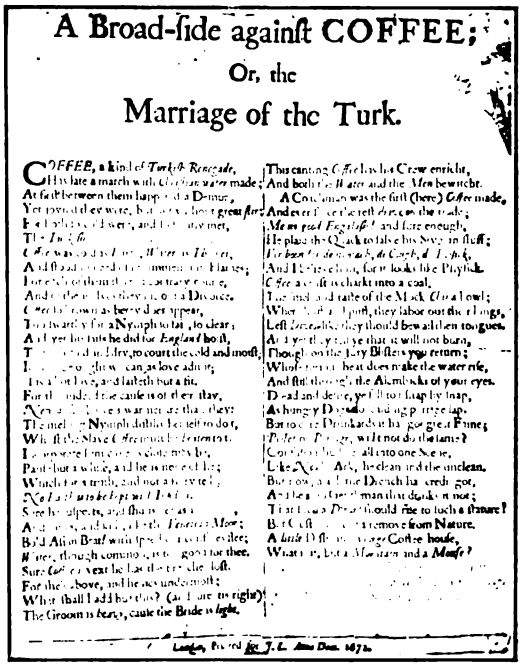
A Coachman was the first (here) *Coffee* made,
And ever since the rest *drive on* the trade;
Me no good Engalash! and sure enough,
He plaid the Quack to salve his Stygian stuff:
Ver boon for de stomach, de Cough, de Ptisick
And I believe him, for it looks like Physick.
Coffee a crust is charkt into a coal,
The smell and taste of the Mock *China* bowl;
Where huff and puff, they labour out their lungs,
Lest *Dives*-like they should bewail their tongues.
And yet they tell ye that it will not burn,
Though on the Jury Blisters you return:
Whose furious heat does make the water rise,
And still through the Alembicks of your eyes.
Dread and desire, ye fall to't snap by snap,
As hungry Dogs do scalding porrige lap,
But to cure Drunkards it has got great Fame;
Posset or *Porrige*, will't not do the same?
Confusion huddles all into one Scene,
Like *Noah's* Ark, the clean and the unclean.
But now, alas! the Drench has credit got,
And he's no Gentleman that drinks it not;
That such a *Dwarf* should rise to such a stature!
But Custom is but a remove from Nature.
A *little* Dish, and a *large* Coffee-house,
What is it, but a *Mountain* and a *Mouse?*

* * *

Mens humana novitatis avidissima.

And so it came to pass that coffee history repeated itself in England. Many good people became convinced that coffee was a dangerous drink. The tirades against the beverage in that far-off time sound not unlike the advertising patter employed by some of our present-day coffee-substitute manufacturers. It was even ridiculed by being referred to as "ninny broth" and "Turkey gruel."

A brief description of the excellent vertues of that sober and wholesome drink called coffee appeared in 1674 and proved an able and dignified answer to the attacks that had preceded it. That same year, for the first time in history, the sexes divided in a coffee controversy, and there was issued *The Women's Petition against Coffee, representing to public consideration the grand inconveniences accruing to their*



A Broad-side againſt COFFEE;
Or, the
Marriage of the Turk.

A BROADSIDE OF 1672

sex from the excessive use of the drying and enfeebling Liquor, in which the ladies, who had not been accorded the freedom of the coffee houses in England, as was the custom in France, Germany, Italy, and other countries on the Continent, complained that coffee made men as "unfruitful as the deserts where that unhappy berry is said to be bought." Besides the more serious complaint that the whole race was in danger of extinction, it was urged that "on a domestic message a husband would stop by the way to drink a couple of cups of coffee."

This pamphlet is believed to have precipitated the attempt at suppression by the crown the following year, despite the prompt appearing, in 1674, of *The Men's Answer to the Women's Petition Against Coffee, vindicating . . . their liquor, from the undeserved aspersion lately cast upon them, in their scandalous pamphlet.*

The 1674 broadside in defense of coffee was the first to be illustrated; and for all its air of pretentious grandeur and occasional bathos, it was not a bad rhyming advertisement for the persecuted drink. It was printed for Paul Greenwood and sold "at the sign of the coffee mill and tobacco-roll in Cloath-fair near West-Smithfield, who selleth the best Arabian coffee powder and chocolate in cake or roll, after the Spanish fashion, etc." The following extracts will serve to illustrate its epic character:

When the sweet Poison of the Treacherous Grape,
Had Acted on the world a General Rape;
Drowning our very Reason and our Souls
In such deep Seas of large o'reflowing Bowls,

* * *

When Foggy Ale, leavying up mighty Trains
Of muddy Vapours, had besieg'd our Brains;

* * *

Then Heaven in Pity, to Effect our Cure,

* * *

First sent amongst us this *All-healing-Berry,*
At once to make us both *Sober* and *Merry.*
Arabian Coffee, a Rich Cordial
To Purse and Person Beneficial,
Which of so many Vertues doth partake,
Its Country's called Felix for its sake.
From the Rich Chambers of the Rising Sun,
Where Arts, and all good Fashions first begun,
Where Earth with choicest Rarities is blest,
And dying *Phoenix* builds Her wondrous Nest:
COFFEE arrives, that Grave and wholesome Liquor,
That heals the Stomack, makes the Genius quicker,

A BROADSIDE OF 1674
The first one to be illustrated

Relieves the Memory, Revives the Sad.

* * *

Do but this Rare ARABIAN Cordial Use,
And thou may'st all the Doctors Slops Refuse.
Hush then, dull QUACKS, your Mountebanking cease,
COFFEE's a speedier Cure for each Disease:
How great its Vertues are, we hence may think,
The VVorlds third Part makes it their common Drink;
In Breif, all you who Healths Rich Treasures Prize,
And Court not Ruby Noses, or blear'd Eyes,
But own Sobriety to be your Drift,
And Love at once good Company and Thrift;
To VVine no more make VVit and Coyn a Trophy,
But come each Night and Frollique here in Coffee.

An eight-page folio, the last argument to be issued in defense of coffee before Charles II sought to follow in the footsteps of Kair Bey and Kuprili, was issued in the early part of 1675. It was entitled *Coffee Houses Vindicated. In answer to the late published Character of a Coffee House. Asserting from Reason, Experience and good Authors the Excellent Use and physical Virtues of that Liquor. . . . With the Grand Conveniency of such civil Places of Resort and ingenious Conversation.*

The advantage of a coffee house compared with a "publick-house" is thus set forth:

> First, In regard of easy expense. Being to wait for or meet a friend, a tavern-reckoning soon breeds a purse-consumption: in an ale house, you must gorge yourself with pot after pot . . . But here, for a penny or two, you may spend two or three hours, have the shelter of a house, the warmth of a fire, the diversion of company; and conveniency, if you please, of taking a pipe of tobacco; and all this without any grumbling or repining. Secondly. For sobriety. It is grown, by the ill influences of I know not what hydropick stars, almost a general custom amongst us, that no bargain can be drove, or business concluded between man and man, but it must be transacted at some publick-house . . . where continual sippings . . . would be apt to fly up into their brains and render them drowsy and indisposed . . . whereas, having now the opportunity of a coffee-house, they repair thither, take each man a dish or two (so far from causing, that it cures any dizziness, or disturbant fumes): and so, dispatching their business, go out more sprightly about their affairs, than before. . . . Lastly, For diversion . . . where can young gentlemen, or shop-keepers, more innocently and advantageously spend an hour or two in the evening than at a coffee-house? Where they shall be sure to meet company, and, by the custom of the house, not such as at other places stingy and reserved to themselves, but free and communicative, where every man may modestly begin his story, and propose to, or answer another, as he thinks fit. . . . So that, upon the whole matter, spight of the idle sarcasms and paltry reproaches thrown upon it, we may, with no less truth than plainness, give this brief character of a well-regulated coffee-house, (for our pen disdains to be an advocate for any sordid holes, that assume that name to cloke the practice of debauchery,) that it is the sanctuary of health, the nursery of temperance, the delight of frugality, and academy of civility, and free-school of ingenuity.

The Ale Wives' Complaint Against the Coffee-houses, a dialogue between a victualer's wife and a coffee man, at difference about spiriting away each other's trade, also was issued in 1675.

As early as 1666, and again in 1672, we find the government planning to strike a blow at the coffee houses. By the year 1675, these "seminaries of sedition" were much frequented by persons of rank and substance, who, "suitable to our native genius," says Anderson,[14] "used great freedom therein with respect to the courts' proceedings in these and like points, so contrary to the voice of the people."

In 1672, Charles II, seemingly eager to emulate the Oriental intolerants that preceded him, determined to try his hand at suppression. "Having been informed of the great inconveniences arising from the great number of persons that resort to coffee-houses," the king "desired the Lord Keeper and the Judges to give their opinion in writing as to how far he might lawfully proceed against them."

Roger North in his *Examen* gives the full story; and D'Israeli, commenting on it, says, "it was not done without some apparent respect for the British constitution." The courts affected not to act against the law, and the judges were summoned to a consultation; but the five who met could not agree in opinion.

Sir William Coventry spoke against the proposed measure. He pointed out that the government obtained considerable revenue from coffee, that the king himself owed to these seemingly obnoxious places no small debt of gratitude in the matter of his own restoration; for they had been permitted in Cromwell's time, when the king's friends had used more liberty of speech than "they dared to do in any other." He urged, also, that it might be rash to issue a command so likely to be disobeyed.

At last, being hard pressed for a reply, the judges gave such a halting opinion in favor of the king's policy as to remind us of the reluctant verdict wrung from the physicians and lawyers of Mecca on the occasion of coffee's first persecution.[15] "The English lawyers, in language which, for its civility and indefiniteness," says Robinson, "would have been the envy of their Eastern brethren," declared that:

> Retailing coffee *might* be an innocent trade, as it *might* be exercised; but as it is used at present, in the nature of a common assembly, to discourse of matters of State, news and *great Persons*, as they are Nurseries of Idleness and Pragmaticalness, and hinder the expence of our native Provisions, they *might* be thought common nuisances.

An attempt was made to mold public opinion to a favorable consideration of the attempt at suppression in *The Grand Concern of England explained,* which was good propaganda for his majesty's enterprise, but utterly failed to carry conviction to the lovers of liberty.

After much backing and filling, the king, on December 23, 1675, issued a proclamation which in its title frankly stated its

[14] Anderson, Adam. *Historical and Chronological Deduction of the Origin of Commerce.* London, 1787.

[15] See chapter III.

object — "for the suppression of coffee houses." It is here given in a somewhat condensed form:

BY THE KING: A PROCLAMATION FOR THE SUPPRESSION OF COFFEE HOUSES

Charles R.

WHEREAS it is most apparent that the multitude of Coffee Houses of late years set up and kept within this kingdom, the dominion of Wales, and town of Berwick-upon-Tweed, and the great resort of Idle and disaffected persons to them, have produced very evil and dangerous effects; as well for that many tradesmen and others, do herein mispend much of their time, which might and probably would be employed in and about their Lawful Calling and Affairs; but also, for that in such houses . . . . . divers false, malitious and scandalous reports are devised and spread abroad to the Defamation of his Majestie's Government, and to the Disturbance of the Peace and Quiet of the Realm; his Majesty hath thought fit and necessary, that the said Coffee Houses be (for the future) Put down, and suppressed, and doth . . . strictly charge and command all manner of persons, That they or any of them do not presume from and after the Tenth Day of January next ensuing, to keep any Public Coffee House, or to utter or sell by retail, in his, her or their house or houses (to be spent or consumed within the same) any Coffee, Chocolet, Sherbett or Tea, as they will answer the contrary at their utmost perils . . . (all licenses to be revoked).

Given at our Court at Whitehall, this third-and-twentieth day of Dec., 1675, in the seven-and-twentieth year of our Reign.

GOD SAVE THE KING.

And then a remarkable thing happened. It is not usual for a royal proclamation issued on the 29th of one month to be recalled on the 8th day of the next; but this is the record established by Charles II. The proclamation was made on December 23, 1675, and issued December 29, 1675. It forbade the coffee houses to operate after January 10, 1676. But so intense was the feeling aroused, that eleven days was sufficient time to convince the king that a blunder had been made. Men of all parties cried out against being deprived of their accustomed haunts. The dealers in coffee, tea, and chocolate demonstrated that the proclamation would greatly lessen his majesty's revenues. Convulsion and discontent loomed large. The king heeded the warning, and on January 8, 1676, another proclamation was issued by which the first proclamation was recalled.

In order to save the king's face, it was solemnly recited that "His Gracious Majesty," out of his "princely consideration and royal compassion" would allow the retailers of coffee liquor to keep open until the 24th of the following June. But this was clearly only a royal subterfuge, as there was no further attempt at molestation, and it is extremely doubtful if any was contemplated at the time the second proclamation was promulgated.

"Than both which proclamations nothing could argue greater guilt nor greater weakness," says Anderson. Robinson remarks, "A battle for freedom of speech was fought and won over this question at a time when Parliaments were infrequent and when the liberty of the press did not exist."

"Penny Universities"

We read in 1677 that "none dare venture into the coffee houses unless he be able to argue the question whether Parliament were dissolved or not."

All through the years remaining in the seventeenth century, and through most of the eighteenth century, the London coffee houses grew and prospered. As before stated, they were originally temperance institutions, very different from the taverns and ale houses. "Within the walls of the coffee house there was always much noise, much clatter, much bustle, but decency was never outraged."

At prices ranging from one to two pence per dish, the demand grew so great that coffee-house keepers were obliged to make the drink in pots holding eight or ten gallons.

The seventeenth-century coffee houses were sometimes referred to as the "penny universities"; because they were great schools of conversation, and the entrance fee was only a penny. Two pence was the usual price of a dish of coffee or tea, this charge also covering newspapers and lights. It was the custom for the frequenter to lay his penny on the bar, on entering or leaving. Admission to the exchange of sparkling wit and brilliant conversation was within the reach of all.

> So great a *Universitie*
> I think there ne're was any;
> In which you may a Schoolar be
> For spending of a Penny.

"Regular customers," we are told, "had particular seats and special attention from the fair lady at the bar, and the tea and coffee boys."

It is believed that the modern custom of tipping, and the word "tip," originated in the coffee houses, where frequently hung brass-bound boxes into which customers were expected to drop coins for the servants. The boxes were inscribed "To Insure Promptness" and from the initial letters of these words came "tip."

The *National Review* says, "before 1715 the number of coffee houses in London was reckoned at 2000." Dufour, who wrote in 1683, declares, upon information received from several persons who had staid in London, that there were 3000 of these places. However, 2000 is probably nearer the fact.

In that critical time in English history, when the people, tired of the misgovernment of the later Stuarts, were most in need of a forum where questions of great moment could be discussed, the coffee house became a sanctuary. Here matters of supreme political import were threshed out and decided for the good of Englishmen for all time. And because many of these questions were so well thought out then, there was no need to fight them out later. England's great struggle for political liberty was really fought and won in the coffee house.

To the end of the reign of Charles II, coffee was looked upon by the government rather as a new check upon license than an added luxury. After the revolution, the London coffee merchants were obliged to petition the House of Lords against new import duties, and it was not until the year 1692 that the government, "for the greater encouragement and advancement of trade and the greater importation of the said respective goods or merchandises," discharged one half of the obnoxious tariff.

Weird Coffee Substitutes

Shortly after the "great fire," coffee substitutes began to appear. First came a liquor made with betony, "for the sake of those who could not accustom themselves to the bitter taste of coffee." Betony is a herb belonging to the mint family, and its root was formerly employed in medicine as an emetic or purgative. In 1719, when coffee was 7s. a pound, came bocket, later known as saloop, a decoction of sassafras and sugar, that became such a favorite among those who could not afford tea or coffee, that there were many saloop stalls in the streets of London. It was also sold at Read's coffee house in Fleet Street.

The Coffee Men Overreach Themselves

The coffee-house keepers had become so powerful a force in the community in 1729 that they lost all sense of proportion; and we find them seriously proposing to usurp the functions of the newspapers. The vainglorious coffee men requested the government to hand over to them a journalistic monopoly; the argument being that the newspapers of the day were choked with advertisements, filled with foolish stories gathered by all-too enterprising newswriters, and that the only way for the government to escape "further excesses occasioned by the freedom of the press" and to rid itself of "those pests of society, the unlicensed newsvendors," was for it to intrust the coffee men, as "the chief supporters of liberty" with the publication of a *Coffee House Gazette*. Information for the journal was to be supplied by the habitués of the houses themselves, written down on brass slates or ivory tablets, and called for twice daily by the *Gazette's* representatives. All the profits were to go to the coffee men — including the expected increase of custom.

Needless to say, this amazing proposal of the coffee-house masters to have the public write its own newspapers met with the scorn and the derision it invited, and nothing ever came of it.

The increasing demand for coffee caused the government tardily to seek to stimulate interest in the cultivation of the plant in British colonial possessions. It was tried out in Jamaica in 1730. By 1732 the experiment gave such promise that Parliament, "for encouraging the growth of coffee in His Majesty's plantations in America," reduced the inland duty on coffee coming from there, "but of none other," from two shillings to one shilling six pence per pound. "It seems that the French at Martinico, Hispaniola, and at the Isle de Bourbon, near Madagascar, had somewhat the start of the English in the new product as had also the Dutch at Surinam, yet none had hitherto been found to equal coffee from Arabia, whence all the rest of the world had theirs." Thus writes Adam Anderson in 1787, somewhat ungraciously seeking to damn England's business rivals with faint praise. Java coffee was even then in the lead, and the seeds of Bourbon-

Santos were multiplying rapidly in Brazilian soil.

The British East India Company, however, was much more interested in tea than in coffee. Having lost out to the French and Dutch on the "little brown berry of Arabia," the company engaged in so lively a propaganda for "the cup that cheers" that, whereas the annual tea imports from 1700 to 1710 averaged 800,000 pounds, in 1721 more than 1,000,000 pounds of tea were brought in. In 1757, some 4,000,000 pounds were imported. And when the coffee house finally succumbed, tea, and not coffee, was firmly intrenched as the national drink of the English people.

A movement in 1873 to revive the coffee house in the form of a coffee "palace," designed to replace the public house as a place of resort for working men, caused the Edinburgh Castle to be opened in London. The movement attained considerable success throughout the British Isles, and even spread to the United States.

Evolution of the Club

Every profession, trade, class, and party had its favorite coffee house. "The bitter black drink called coffee," as Mr. Pepys described the beverage, brought together all sorts and conditions of men; and out of their mixed association there developed groups of patrons favoring particular houses and giving them character. It is easy to trace the transition of the group into a clique that later became a club, continuing for a time to meet at the coffee house or the chocolate house, but eventually demanding a house of its own.

Decline and Fall of the Coffee House

Starting as a forum for the commoner, the coffee house soon became the plaything of the leisure class; and when the club was evolved, the coffee house began to retrograde to the level of the tavern. And so the eighteenth century, which saw the coffee house at the height of its power and popularity, witnessed also its decline and fall. It is said there were as many clubs at the end of the century as there were coffee houses at the beginning.

For a time, when the habit of reading newspapers descended the social ladder, the coffee house acquired a new lease of life. Sir Walter Besant observes:

> They were then frequented by men who came, not to talk, but to read; the smaller tradesmen and the better class of mechanic now came to the coffee-house, called for a cup of coffee, and with it the daily paper, which they could not afford to take in. Every coffee-house took three or four papers; there seems to have been in this latter phase of the once social institution no general conversation. The coffee-house as a place of resort and conversation gradually declined; one can hardly say why, except that all human institutions do decay. Perhaps manners declined; the leaders in literature ceased to be seen there; the city clerk began to crowd in; the tavern and the club drew men from the coffee-house.

A few houses survived until the early years of the nineteenth century, but the social side had disappeared. As tea and coffee entered the homes, and the exclusive club house succeeded the democratic coffee forum, the coffee houses became taverns or chop houses, or, convinced that they had outlived their usefulness, just ceased to be.

Pen Pictures of Coffee-House Life

From the writings of Addison in the *Spectator,* Steele in the *Tatler,* Mackay in his *Journey Through England,* Macaulay in his history, and others, it is possible to draw a fairly accurate pen-picture of life in the old London coffee house.

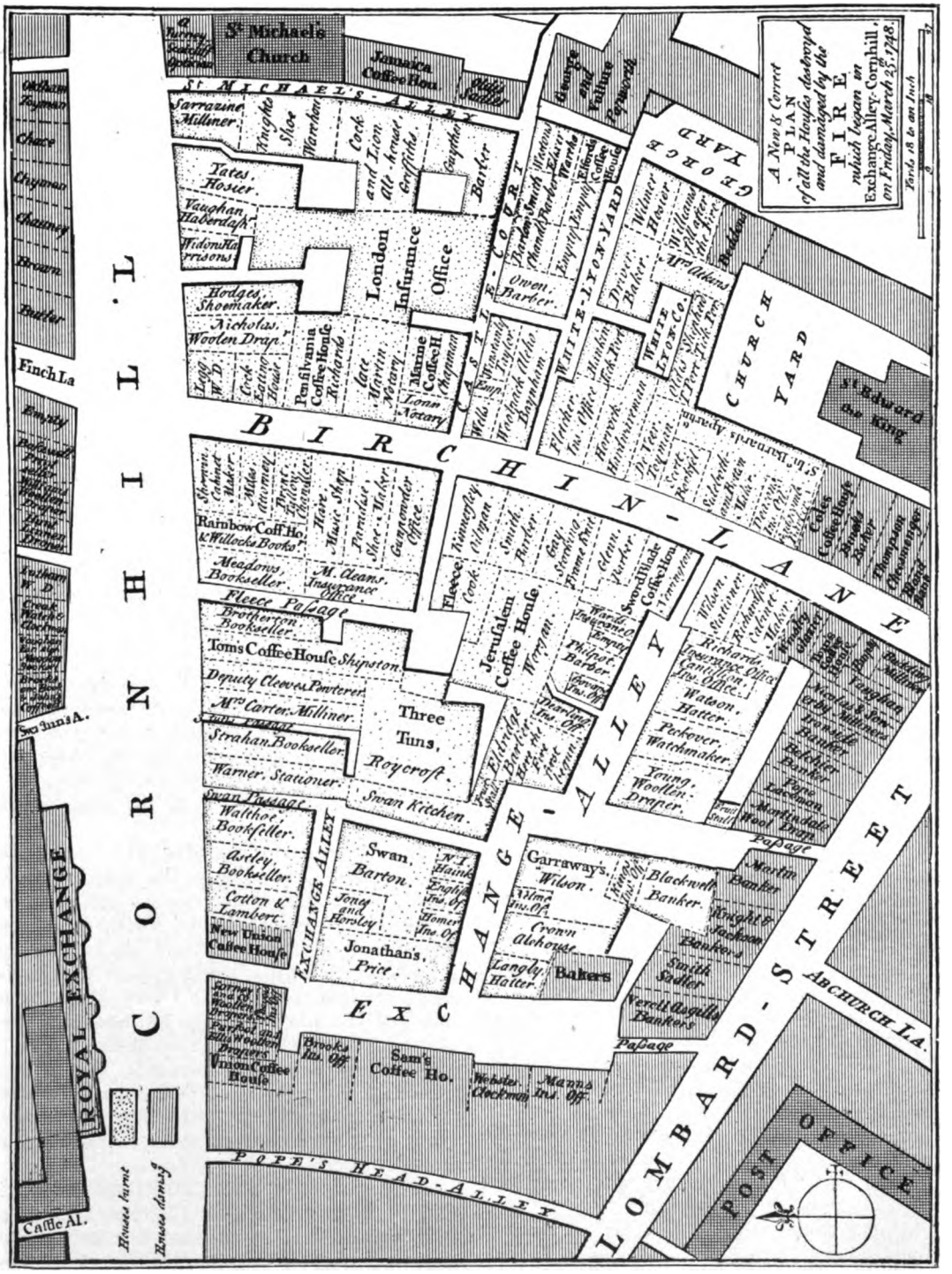
In the seventeenth century the coffee room usually opened off the street. At first only tables and chairs were spread about on a sanded floor. Later, this arrangement was succeeded by the boxes, or booths, such as appear in the Rowlandson caricatures, the picture of the interior of Lloyds, etc.

The walls were decorated with handbills and posters advertising the quack medicines, pills, tinctures, salves, and electuaries of the period, all of which might be purchased at the bar near the entrance, presided over by a prototype of the modern English barmaid. There were also bills of the play, auction notices, etc., depending upon the character of the place.

Then, as now, the barmaids were made much of by patrons. Tom Brown refers to them as charming "Phillises who invite you by their amorous glances into their smoaky territories."

Messages were left and letters received at the bar for regular customers. Stella was instructed to address her letters to Swift, "under cover to Addison at the St. James's coffee house." Says Macaulay:

> Foreigners remarked that it was the coffee house which specially distinguished London from all other cities; that the coffee house was the



MAP SHOWING THE LOCATION OF MANY OF THE OLD LONDON COFFEE HOUSES PREVIOUS TO THE FIRE OF 1748

Londoner's home, and that those who wished to find a gentleman commonly asked, not whether he lived in Fleet Street or Chancery Lane, but whether he frequented the Grecian or the Rainbow.

So every man of the upper or middle classes went daily to his coffee house to learn the news and to discuss it. The better class houses were the meeting places of the most substantial men in the community. Every coffee house had its orator, who became to his admirers a kind of "fourth estate of the realm."

Macaulay gives us the following picture of the coffee house of 1685:

Nobody was excluded from these places who laid down his penny at the bar. Yet every rank and profession, and every shade of religious and political opinion had its own headquarters.

There were houses near St. James' Park, where fops congregated, their heads and shoulders covered with black or flaxen wigs, not less ample than those which are now worn by the Chancellor and by the Speaker of the House of Commons. The atmosphere was like that of a perfumer's shop. Tobacco in any form than that of richly scented snuff was held in abomination. If any clown, ignorant of the usages of the house, called for a pipe, the sneers of the whole assembly and the short answers of the waiters soon convinced him that he had better go somewhere else.

Nor, indeed, would he have far to go. For, in general, the coffee-houses reeked with tobacco like a guard room. Nowhere was the smoking more constant than at Will's. That celebrated house, situated between Covent Garden and Bow street, was sacred to polite letters. There the talk was about poetical justice and the unities of place and time. Under no roof was a greater variety of figures to be seen. There were earls in stars and garters, clergymen in cassocks and bands, pert Templars, sheepish lads from universities, translators and index makers in ragged coats of frieze. The great press was to get near the chair where John Dryden sate. In winter that chair was always in the warmest nook by the fire; in summer it stood in the balcony. To bow to the Laureate, and to hear his opinion of Racine's last tragedy, or of Bossu's treatise on epic poetry, was thought a privilege. A pinch from his snuff-box was an honour sufficient to turn the head of a young enthusiast.

There were coffee-houses where the first medical men might be consulted. Dr. John Radcliffe, who, in the year 1685, rose to the largest practice in London, came daily, at the hour when the Exchange was full, from his house in Bow street, then a fashionable part of the capital, to Garraway's, and was to be found, surrounded by surgeons and apothecaries, at a particular table.

There were Puritan coffee-houses where no oath was heard, and where lank-haired men discussed election and reprobation through their noses; Jew coffee-houses, where dark-eyed money changers from Venice and Amsterdam greeted each other; and Popish coffee-houses, where, as good Protestants believed, Jesuits planned over their cups another great fire, and cast silver bullets to shoot the King.

Ned Ward gives us this picture of the coffee house of the seventeenth century. He is describing Old Man's, Scotland Yard:

We now ascended a pair of stairs, which brought us into an old-fashioned room, where a gaudy crowd of odoriferous Tom-Essences were walking backwards and forwards, with their hats in their hands, not daring to convert them to their intended use lest it should put the foretops of their wigs into some disorder. We squeezed through till we got to the end of the room, where, at a small table, we sat down, and observed that it was as great a rarity to hear anybody call for a dish of politicians porridge, or any other liquor, as it is to hear a beau call for a pipe of tobacco; their whole exercise being to charge and discharge their nostrils and keep the curls of their periwigs in their proper order. The clashing of their snush-box lids, in opening and shutting, made more noise than their tongues. Bows and cringes of the newest mode were here exchanged 'twixt friend and friend with wonderful exactness. They made a humming like so many hornets in a country chimney, not with their talking, but with their whispering over their new Minuets and Bories, with the hands in their pockets, if only freed from their snush-box. We now began to be thoughtful of a pipe of tobacco, whereupon we ventured to call for some instruments of evaporation, which were accordingly brought us, but with such a kind of unwillingness, as if they would much rather been rid of our company; for their tables were so very neat, and shined with rubbing like the upper-leathers of an alderman's shoes, and as brown as the top of a country house-wife's cupboard. The floor was as clean swept as a Sir Courtly's dining room, which made us look round to see if there were no orders hung up to impose the forfeiture of so much mop-money upon any person that should spit out of the chimney-corner. Notwithstanding we wanted an example to encourage us in our porterly rudeness, we ordered them to light the wax candle, by which we ignified our pipes and blew about our whiffs; at which several Sir Foplins drew their faces into as many peevish wrinkles as the beaux at the Bow Street Coffee-house, near Covent Garden, did when the gentleman in masquerade came in amongst them, with his oyster-barrel muff and turnip-buttons, to ridicule their fopperies.

In *A Brief and Merry History of Great Britain* we read:

There is a prodigious number of Coffee-Houses in London, after the manner I have seen some in Constantinople. These Coffee-Houses are the constant Rendezvous for Men of Business as well as the idle People. Besides Coffee, there are many other Liquors, which People cannot well relish at first. They smoak Tobacco, game and read Papers of Intelligence; here they treat of Matters of State, make Leagues with Foreign Princes, break them again,

WHITE'S AND BROOKES', ST. JAMES'S STREET

and transact Affairs of the last Consequence to the whole World. They represent these Coffee-Houses as the most agreeable things in London, and they are, in my Opinion, very proper Places to find People that a Man has Business with, or to pass away the Time a little more agreeably than he can do at home; but in other respects they are loathsome, full of smoak, like a Guard-Room, and as much crowded. I believe 'tis these Places that furnish the Inhabitants with Slander, for there one hears exact Account of everything done in Town, as if it were but a Village.

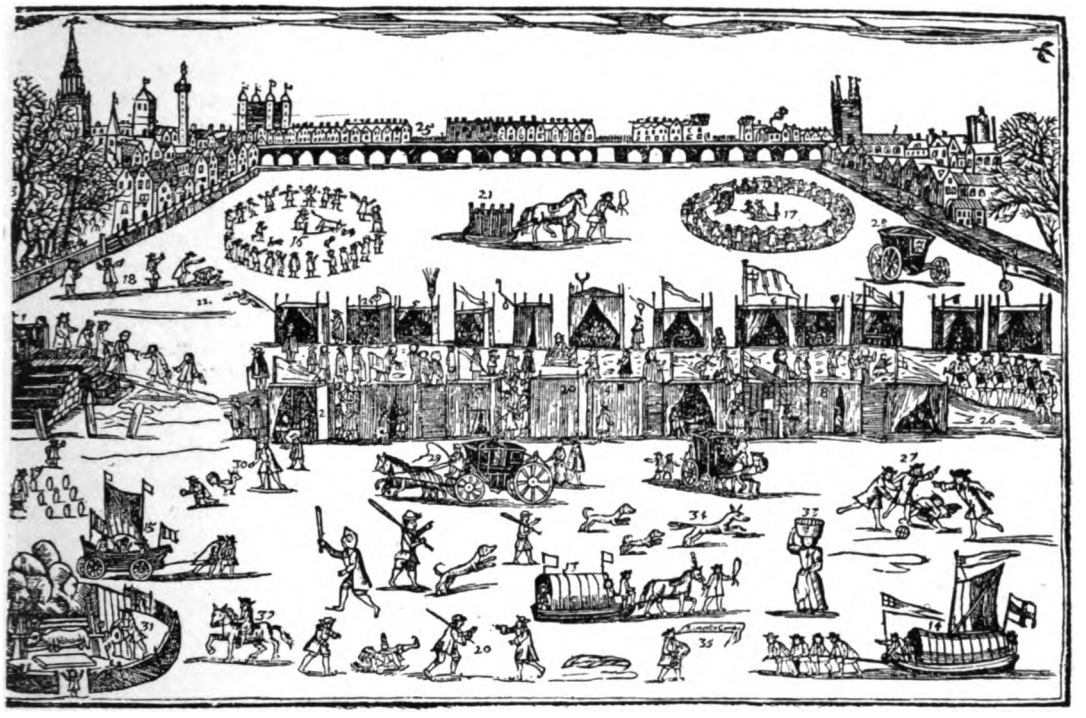
At those Coffee-Houses, near the Courts, called White's, St. James's, Williams's, the Conversation turns chiefly upon the Equipages, Essence, Horse-Matches, Tupees, Modes and Mortgages; the Cocoa-Tree upon Bribery and Corruption, Evil ministers, Errors and Mistakes in Government: the Scotch Coffee-Houses towards Charing Cross, on Places and Pensions; the Tiltyard and Young Man's on Affronts, Honour, Satisfaction, Duels and Rencounters. I was informed that the latter happen so frequently, in this part of the Town, that a Surgeon and a Sollicitor are kept constantly in waiting; the one to dress and heal such Wounds as may be given, and the other in case of Death to bring off the Survivor with a Verdict of Se Devendendo or Manslaughter. In those Coffee-Houses about the Temple the Subjects are generally on Causes, Costs, Demurrers, Rejoinders and Exceptions; Daniel's the Welch Coffee-House in Fleet Street, on Births, Pedigrees and Descents; Child's and the Chapter upon Glebes, Tithes, Advowsons, Rectories and Lectureships; North's Undue Elections, False Polling, Scrutinies, etc.; Hamlin's, Infant-Baptism, Lay-Ordination, Free-Will, Election and Reprobation; Batson's, the Prices of Pepper, Indigo and Salt-Petre; and all those about the Exchange, where the Merchants meet to transact their Affairs, are in a perpetual hurry about Stock-Jobbing, Lying, Cheating, Tricking Widows and Orphans, and committing Spoil and Rapine on the Publick.

In the eighteenth century beer and wine were commonly sold at the coffee houses in addition to tea and chocolate. Daniel Defoe, writing of his visit to Shrewsbury in 1724, says, "I found there the most coffee houses around the Town Hall that ever I saw in any town, but when you come into them they are but ale houses, only they think that the name coffee house gives a better air."

Speaking of the coffee houses of the city, Besant says:

Rich merchants alone ventured to enter certain of the coffee houses, where they transacted business more privately and more expeditiously than on the Exchange. There were coffee houses where officers of the army alone were found; where the city shopkeeper met his chums; where actors congregated; where only divines, only lawyers, only physicians, only wits and those who came to hear them were found. In all alike the visitor put down his penny and went in, taking his own seat if he was an habitue; he called for a cup of tea or coffee and paid his twopence for it; he could call also, if he pleased, for a cordial; he was expected to talk with his neighbour whether he knew him or not. Men went to certain coffee houses in order to meet the well-known poets and writers who were to be found there, as Pope went in search of Dryden. The daily papers and the pamphlets of the day were taken in. Some of the coffee houses, but not the more respectable, allowed the use of tobacco.

COFFEE HOUSE POLITICIANS OF THE SEVENTEENTH CENTURY



THE GREAT FAIR ON THE FROZEN THAMES—1683

From a broadside entitled *Wonders on the Deep.* Figure 2 is the Duke of York's Coffee House

Mackay, in his *Journey Through England* (1724), says:

We rise by nine, and those that frequent great men's levees find entertainment at them till eleven, or, as in Holland, go to tea-tables; about twelve the *beau monde* assemble in several coffee or chocolate houses; the best of which are the Cocoatree and White's chocolate houses, St. James', the Smyrna, Mrs. Rochford's and the British coffee houses; and all these so near one another that in less than an hour you see the company of them all. We are carried to these places in chairs (or sedans), which are here very cheap, a guinea a week, or a shilling per hour, and your chairmen serve you for porters to run on errands, as your gondoliers do at Venice.

If it be fine weather we take a turn into the park till two, when we go to dinner; and if it be dirty, you are entertained at picquet or basset at White's, or you may talk politics at the Smyrna or St. James'. I must not forget to tell you that the parties have their different places, where, however, a stranger is always well received; but a Whig will no more go to the Cocoatree than a Tory will be seen at the Coffee House, St. James'.

The Scots go generally to the British, and a mixture of all sorts go to the Smyrna. There are other little coffee houses much frequented in this neighborhood—Young Man's for officers; Old Man's for stock jobbers, paymasters and courtiers, and Little Man's for sharpers. I never was so confounded in my life as when I entered into this last. I saw two or three tables full at faro, and was surrounded by a set of sharp faces that I was afraid would have devoured me with their eyes. I was glad to drop two or three half crowns at faro to get off with a clear skin, and was overjoyed I so got rid of them.

At two we generally go to dinner; ordinaries are not so common here as abroad, yet the French have set up two or three good ones for the convenience of foreigners in Suffolk street, where one is tolerably well served; but the general way here is to make a party at the coffee house to go to dine at the tavern, where we sit till six, when we go to the play, except you are invited to the table of some great man, which strangers are always courted to and nobly entertained.

Mackay writes that "in all the coffee houses you have not only the foreign prints but several English ones with foreign occurrences, besides papers of morality and party disputes."

"After the play," writes Defoe, "the best company generally go to Tom's and Will's coffee houses, near adjoining, where there is playing at picquet and the best of conversation till midnight. Here you will see blue and green ribons and stars sitting familiarly and talking with the same free-

dom as if they had left their equality and degrees of distance at home."

Before entering the coffee house every one was recommended by the *Tatler* to prepare his body with three dishes of bohea and to purge his brains with two pinches of snuff. Men had their coffee houses as now they have their clubs—sometimes contented with one, sometimes belonging to three or four. Johnson, for instance, was connected with St. James's, the Turk's Head, the Bedford, Peele's, besides the taverns which he frequented. Addison and Steele used Button's; Swift,

THE LION'S HEAD AT BUTTON'S COFFEE HOUSE
Designed by Hogarth, and put up by Addison, 1713
From a water color by T. H. Shepherd

Button's, the Smyrna, and St. James's; Dryden, Will's; Pope, Will's and Button's; Goldsmith, the St. James's and the Chapter; Fielding, the Bedford; Hogarth, the Bedford and Slaughter's; Sheridan, the Piazza; Thurlow, Nando's.

Some Famous Coffee Houses

Among the famous English coffee houses of the seventeenth-eighteenth century period were St. James's, Will's, Garraway's, White's, Slaughter's, the Grecian, Button's, Lloyd's, Tom's, and Don Saltero's.

St. James's was a Whig house frequented by members of Parliament, with a fair sprinkling of literary stars. Garraway's catered to the gentry of the period, many of whom naturally had Tory proclivities.

One of the notable coffee houses of Queen Anne's reign was Button's. Here Addison could be found almost every afternoon and evening, along with Steele, Davenant, Carey, Philips, and other kindred minds. Pope was a member of the same coffee house club for a year, but his inborn irascibility eventually led him to drop out of it.

At Button's a lion's head, designed by Hogarth after the Lion of Venice, "a proper emblem of knowledge and action, being all head and paws," was set up to receive letters and papers for the *Guardian*[16]. The *Tatler* and the *Spectator* were born in the coffee house, and probably English prose would never have received the impetus given it by the essays of Addison and Steele had it not been for coffee house associations.

Pope's famous *Rape of the Lock* grew out of coffee-house gossip. The poem itself contains one charming passage on coffee.[17]

Another frequenter of the coffee houses of London, when he had the money to do so, was Daniel Defoe, whose *Robinson Crusoe* was the precursor of the English novel. Henry Fielding, one of the greatest of all English novelists, loved the life of the more bohemian coffee houses, and was, in fact, induced to write his first great novel, *Joseph Andrews,* through coffee-house criticisms of Richardson's *Pamela.*

Other frequenters of the coffee houses of the period were Thomas Gray and Richard Brinsley Sheridan. Garrick was often to be seen at Tom's in Birchin Lane, where also Chatterton might have been found on many an evening before his untimely death.

The London Pleasure Gardens

The second half of the eighteenth century was covered by the reigns of the Georges. The coffee houses were still an important factor in London life, but were influenced somewhat by the development of gardens in which were served tea, chocolate, and other drinks, as well as coffee. At the coffee houses themselves, while cof-

[16] More fully described in chapter XXXII.
[17] See chapter XXXII.

Hogarth del:
Sam. Ireland fecit
Characters who frequented Button's Coffee-house about the year 1730
From the original drawing by HOGARTH in the Collection of Sam. Ireland.

A TRIO OF NOTABLES AT BUTTON'S IN 1730
The figure in the cloak is Count Viviani; of the figures facing the reader, the draughts player is Dr. Arbuthnot, and the figure standing is assumed to be Pope

fee remained the favorite beverage, the proprietors, in the hope of increasing their patronage, began to serve wine, ale, and other liquors. This seems to have been the first step toward the decay of the coffee house.

The coffee houses, however, continued to be the centers of intellectual life. When Samuel Johnson and David Garrick came together to London, literature was temporarily in a bad way, and the hack writers of the time dwelt in Grub Street.

It was not until after Johnson had met with some success, and had established the first of his coffee-house clubs at the Turk's Head, that literature again became a fashionable profession.

This really famous literary club met at the Turk's Head from 1763 to 1783. Among the most notable members were Johnson, the arbiter of English prose; Oliver Goldsmith; Boswell, the biographer; Burke, the orator; Garrick, the actor; and Sir Joshua Reynolds, the painter. Among the later members were Gibbon, the historian; and Adam Smith, the political economist.

Certain it is that during the sway of the English coffee house, and at least partly through its influence, England produced a better prose literature, as embodied alike in her essays, literary criticisms, and novels, than she ever had produced before.

The advent of the pleasure garden brought coffee out into the open in England; and one of the reasons why gardens, such as Ranelagh and Vauxhall, began to be more frequented than the coffee houses was that they were popular resorts for women as well as for men. All kinds of beverages were served in them; and soon the women began to favor tea as an afternoon drink. At least, the great development in the use of tea dates from this period; and many of these resorts called themselves tea gardens.

The use of coffee by this time, however, was well established in the homes as a breakfast and dinner beverage, and such consumption more than made up for any loss sustained through the gradual decadence of the coffee house. Yet signs of the change in national taste that arrived with the Georges were not wanting; for the active propaganda of the British East India Company was fairly well launched during Queen Anne's reign.

The London pleasure gardens of the eighteenth century were unique. At one time there was a "mighty maze" of them. Their season extended from April or May to August or September. At first there was no charge for admission, but Warwick Wroth[18] tells us that visitors usually purchased cheese cakes, syllabubs, tea, coffee and ale.

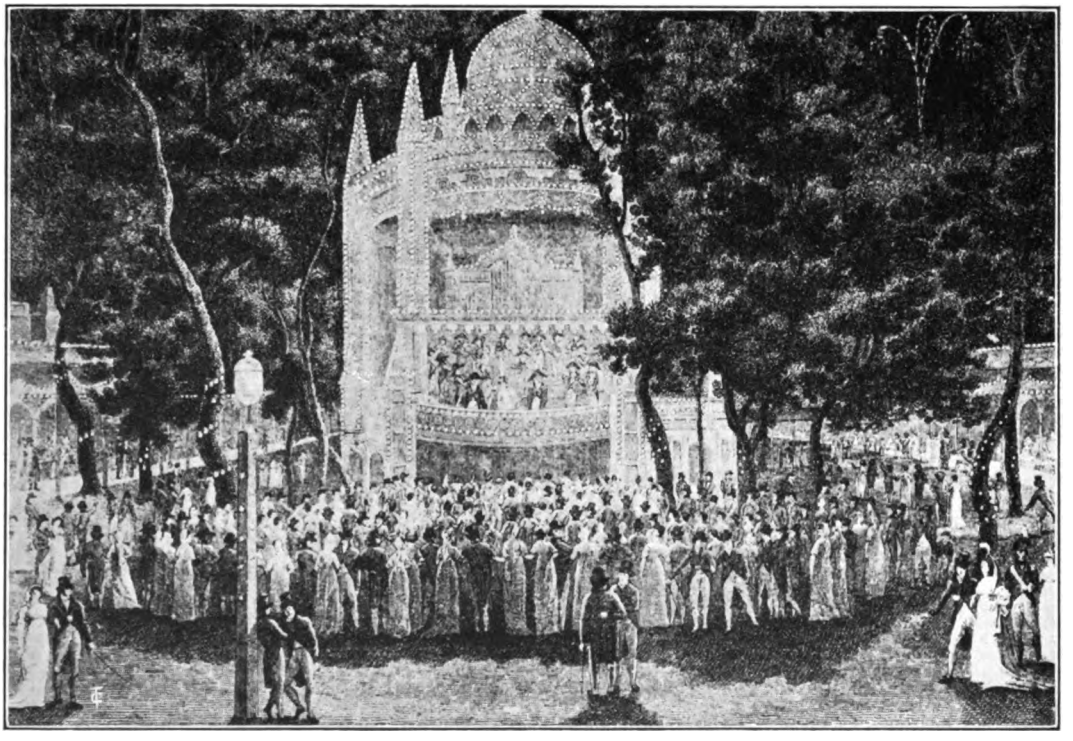
The four best-known London gardens were Vauxhall; Marylebone; Cuper's, where the charge for admission subsequently was fixed at not less than a shilling; and Ranelagh, where the charge of half a crown included "the Elegant Regale" of tea, coffee, and bread and butter.

[18] Wroth, Warwick. *The London Pleasure Gardens of the 18th Century.* London, 1896.

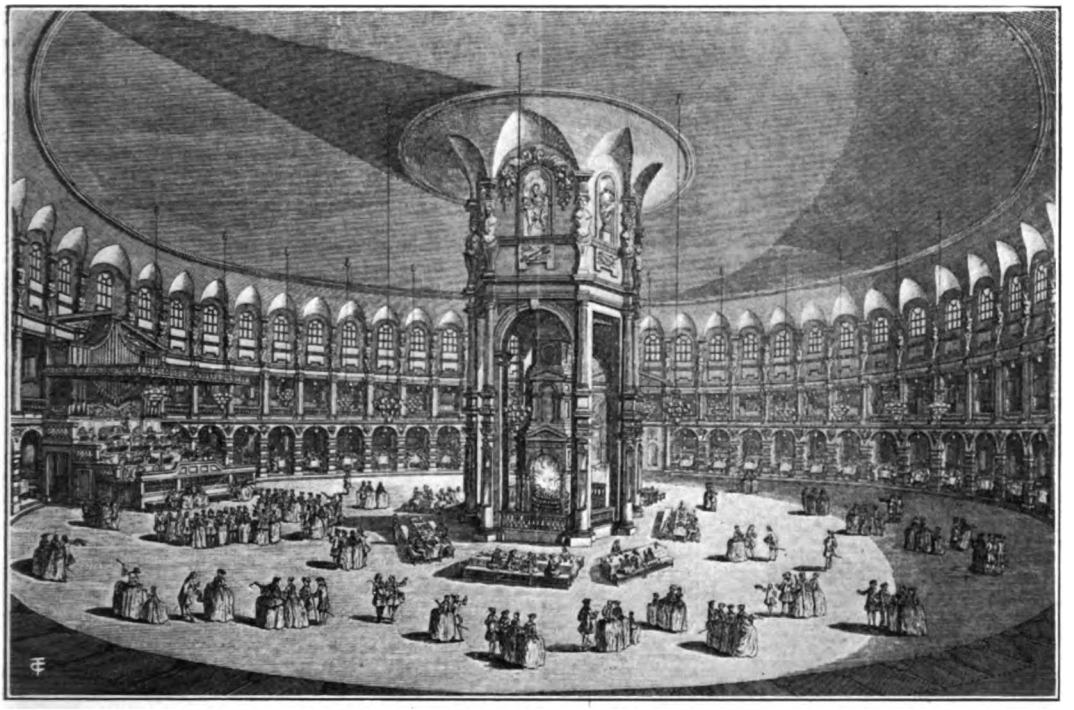
The pleasure gardens provided walks, rooms for dancing, skittle grounds, bowling greens, variety entertainments, and promenade concerts; and not a few places were given over to fashionable gambling and racing.

The Vauxhall Gardens, one of the most favored resorts of pleasure-seeking Londoners, were located on the Surrey side of the Thames, a short distance east of Vauxhall Bridge. They were originally known as the New Spring Gardens (1661), to distinguish them from the old Spring Gardens at Charing Cross. They became famous in the reign of Charles II. Vauxhall was celebrated for its walks, lit with thousands of lamps, its musical and other performances, suppers, and fireworks. High and low were to be found there, and the drinking of tea and coffee in the arbors was a feature. The illustration shows the garden brightly illuminated by lanterns and lamps on some festival occasion. Coffee and tea were served in the arbors.

The Ranelagh, "a place of public entertainment," erected at Chelsea in 1742, was a kind of Vauxhall under cover. The principal room, known as the Rotunda, was circular in shape, 150 feet in diameter, and



VAUXHALL GARDENS ON A GALA NIGHT



THE ROTUNDA IN RANELAGH GARDENS WITH THE COMPANY AT BREAKFAST — 1751

had an orchestra in the center and tiers of boxes all around. Promenading and taking refreshments in the boxes were the principal divertisements. Except on gala nights of masquerades and fireworks, only tea, coffee, bread and butter were to be had at Ranelagh.

In the group of gardens connected with mineral springs was the Dog and Duck (St. George's Spa), which became at last a tea garden and a dancing saloon of doubtful repute.

Still another division, recognized by Wroth, consisted mainly of tea gardens, among them Highbury Barn, The Canonbury House, Hornsey and Copenhagen House, Bagnigge Wells, and White Conduit House. The two last named were the classic tea gardens of the period. Both were provided with "long rooms" in case of rain, and for indoor promenades with organ music. Then there were the Adam and Eve tea gardens, with arbors for tea-drinking parties, which subsequently became the Adam and Eve Tavern and Coffee House. Well known were the Bayswater Tea Gardens and the Jews Harp House and Tea Gardens. All these were provided with neat, "genteel" boxes, let into the hedges and alcoves, for tea and coffee drinkers.

Locating the Notable Coffee Houses

GARRAWAY'S, 3 'Change Alley, Cornhill, was a place for great mercantile transactions. Thomas Garway, the original proprietor, was a tobacconist and coffee man, who claimed to be the first that sold tea in England, although not at this address. The later Garraway's was long famous as a sandwich and drinking room for sherry, pale ale, and punch, in addition to tea and coffee. It is said that the sandwich-maker was occupied two hours in cutting and arranging the sandwiches for the day's consumption. After the "great fire" of 1666 GARRAWAY'S moved into the same place in Exchange Alley where Elford had been before the fire. Here he claimed to have the oldest coffee house in London; but the ground on which BOWMAN'S had stood was occupied later by the VIRGINIA and the JAMAICA coffee houses. The latter was damaged by the fire of 1748 which consumed GARRAWAY'S and ELFORD'S (see map of the 1748 fire).

WILL'S, the predecessor of BUTTON'S, first had the title of the RED COW, then of

GARRAWAY'S COFFEE HOUSE IN 'CHANGE ALLEY
Garway (or Garraway) claimed to have been first to sell Tea in England

the ROSE. It was kept by William Urwin, and was on the north side of Russell Street at the corner of Bow Street. "It was Dryden who made Will's coffee house the great resort of the wits of his time." (*Pope* and *Spence.*) The room in which the poet was accustomed to sit was on the first floor; and his place was the place of honor by the fireside in the winter, and at the corner of the balcony, looking over the street, in fine weather; he called the two places his winter and his summer seat. This was called the dining-room floor. The company did not sit in boxes as subsequently, but at various tables which were dispersed through the room. Smoking was permitted in the public room; it was then so much in vogue that it does not seem to have been considered a nuisance. Here, as in other similar places of meeting, the visitors divided themselves into parties; and we are told by Ward that the young beaux and wits, who seldom approached the principal table, thought it a great honor to have a pinch out of Dryden's snuff-box. After Dryden's death WILL'S was transferred to a house opposite, and became BUTTON'S, "over against THOMAS'S in Covent Garden." Thither also Addison transferred much company from THOMAS'S. Here Swift first saw Addison. Hither also came "Steele, Arbuthnot and many other wits of the time." BUTTON'S continued in vogue until Addison's death and Steele's retirement into Wales, after which the coffee drinkers went to the BEDFORD, dinner parties to the SHAKESPEARE. BUTTON'S was subsequently known as the CALEDONIEN.

SLAUGHTER'S, famous as the resort of painters and sculptors in the eighteenth century, was situated at the upper end of the west side of St. Martin's Lane. Its first landlord was Thomas Slaughter, 1692. A second SLAUGHTER'S (NEW SLAUGHTER'S) was established in the same street in 1760, when the original SLAUGHTER'S adopted the name of OLD SLAUGHTER'S. It was torn down in 1843-44. Among the notables who frequented it were Hogarth; young Gainsborough; Cipriani; Haydon; Roubiliac; Hudson, who painted the Dilettanti portraits; M'Ardell, the mezzotinto-

BUTTON'S COFFEE HOUSE, GREAT RUSSELL STREET
Afterward it became the Caledonien
From a water color by T. H. Shepherd

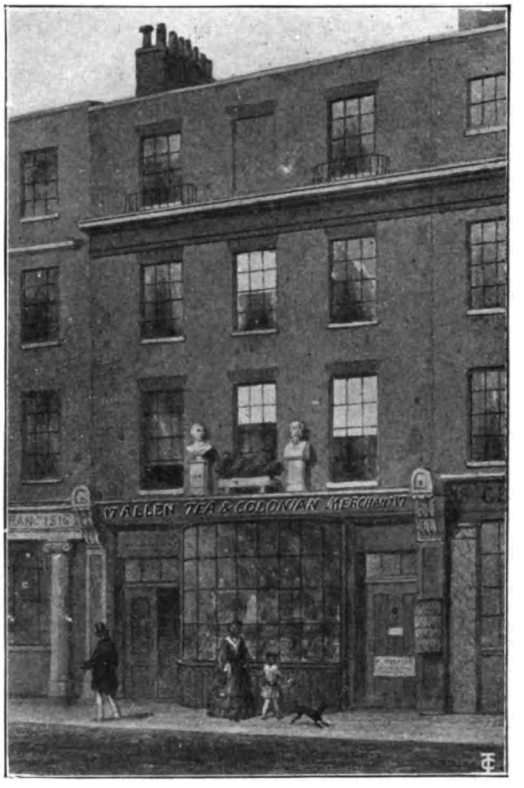
scraper; Luke Sullivan, the engraver; Gardell, the portrait painter; and Parry, the Welsh harper.

TOM'S, in Birchin Lane, Cornhill, though in the main a mercantile resort, acquired some celebrity from having been frequented by Garrick. TOM'S was also frequented by Chatterton, as a place "of the best resort." Then there was TOM'S in Devereux Court, Strand, and TOM'S at 17 Great Russell Street, Covent Garden, opposite BUTTON'S, a celebrated resort during the reign of Queen Anne and for more than a century after.

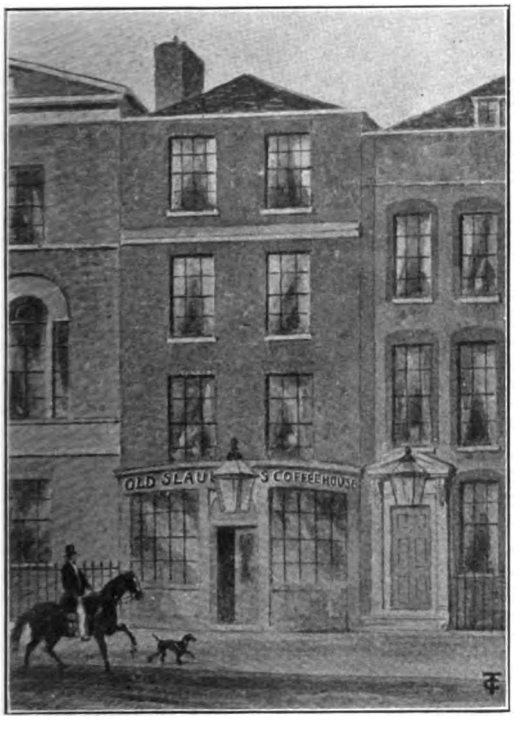
THE GRECIAN, Devereux Court, Strand, was originally kept by one Constantine, a Greek. From this house Steele proposed to date his learned articles in the *Tatler;* it is mentioned in No. 1 of the *Spectator,* and it was much frequented by Goldsmith. The GRECIAN was Foote's morning lounge. In 1843 the premises became the Grecian Chambers, with a bust of Lord Devereux, earl of Essex, over the door.

LLOYD'S, Royal Exchange, celebrated for its priority of shipping intelligence and its marine insurance, originated with Edward Lloyd, who about 1688 kept a coffee house in Tower Street, later in Lombard Street corner of Abchurch Lane. It was a modest place of refreshment for seafarers and merchants. As a matter of convenience, Edward Lloyd prepared "ships' lists" for the guidance of the frequenters of the coffee house. "These lists, which were written by hand, contained," according to Andrew Scott, "an account of vessels which the underwriters who met there were likely to have offered them for insurance." Such was the beginning of two institutions that have since exercised a dominant influence on the sea-carrying trade of the whole world — the Royal Exchange Lloyd's, the greatest insurance institution in the world, and Lloyd's Register of Shipping. Lloyd's now has 1400 agents in all parts of the world. It receives as many as 100,000 telegrams a year. It records through its intelligence service the daily movements of 11,000 vessels.

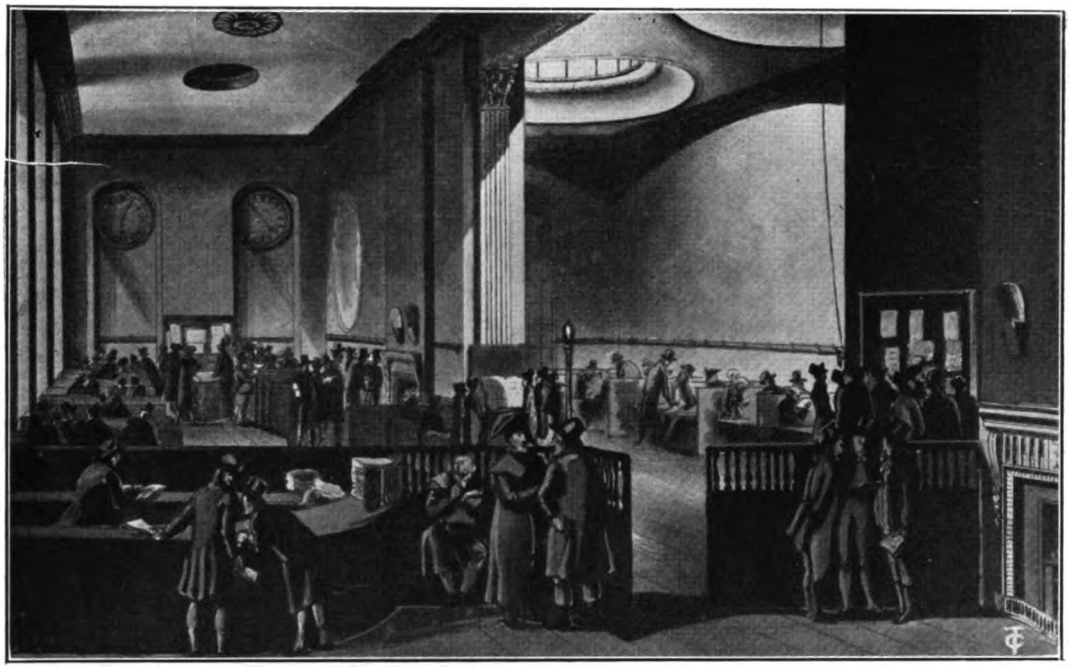
In the beginning one of the apartments in the Exchange was fitted up as LLOYD'S



TOM'S COFFEE HOUSE, 17 GREAT RUSSELL STREET
Used as a coffee house until 1804 and razed in 1865
From a water color by T. H. Shepherd



SLAUGHTER'S COFFEE HOUSE, ST. MARTIN'S LANE
It was taken down in 1843
From a water color by T. H. Shepherd, 1841



LLOYD'S COFFEE HOUSE IN THE ROYAL EXCHANGE, SHOWING THE SUBSCRIPTION ROOM

coffee room. Edward Lloyd died in 1712. Subsequently the coffee house was in Pope's Head Alley, where it was called NEW LLOYD'S coffee house, but on September 14, 1784, it was removed to the northwest corner of the Royal Exchange, where it remained until the partial destruction of that building by fire.

In rebuilding the Exchange there were provided the Subscribers' or Underwriters' room, the Merchants' room, and the Captains' room. *The City,* second edition, 1848, contains the following description of this most famous rendezvous of eminent merchants, shipowners, underwriters, insurance, stock and exchange brokers:

Here is obtained the earliest news of the arrival and sailing of vessels, losses at sea, captures, recaptures, engagements and other shipping intelligence; and proprietors of ships and freights are insured by the underwriters. The rooms are in the Venetian style with Roman enrichments. At the entrance of the room are exhibited the Shipping Lists, received from Lloyd's agents at home and abroad, and affording particulars of departures or arrivals of vessels, wrecks, salvage, or sale of property saved, etc. To the right and left are "Lloyd's Books," two enormous ledgers. Right hand, ships "spoken with" or arrived at their destined ports; left hand, records of wrecks, fires or severe collisions, written in a fine Roman hand in "double lines." To assist the underwriters in their calculations, at the end of the room is an Anemometer, which registers the state of the wind day and night; attached is a rain gauge.

THE BRITISH, Cockspur Street, "long a house of call for Scotchmen," was fortunate in its landladies. In 1759 it was kept by the sister of Bishop Douglas, so well known for his works against Lauder and Bower, which may explain its Scottish fame. At another period it was kept by Mrs. Anderson, described in Mackenzie's *Life of Home* as "a woman of uncommon talents and the most agreeable conversation."

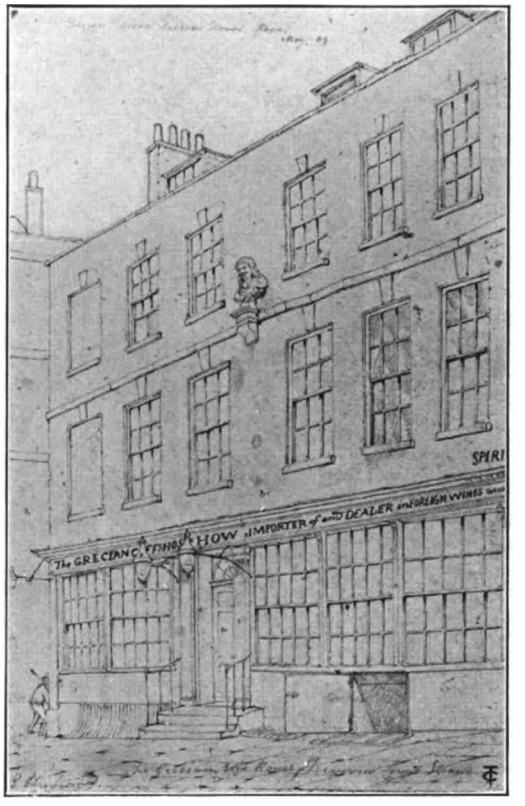
DON SALTERO'S, 18 Cheyne Walk, Chelsea, was opened by a barber named Salter in 1695. Sir Hans Sloane contributed of his own collection some of the refuse gimcracks that were to be found in Salter's "museum." Vice-Admiral Munden, who had been long on the coast of Spain, where he had acquired a fondness for Spanish titles, named the keeper of the house Don Saltero, and his coffee house and museum DON SALTERO'S.

SQUIRE'S was in Fulwood's Rents, Holburn, running up to Gray's Inn. It was one of the receiving houses of the *Spectator.* In No. 269 the *Spectator* accepts Sir Roger de Coverley's invitation to "smoke a pipe with him over a dish of coffee at Squire's. As I love the old man, I take delight in

complying with everything that is agreeable to him, and accordingly waited on him to the coffee-house, where his venerable figure drew upon us the eyes of the whole room. He had no sooner seated himself at the upper end of the high table, but he called for a clean pipe, a paper of tobacco, a dish of coffee, a wax candle and the 'Supplement' (a periodical paper of that time), with such an air of cheerfulness and good humour, that all the boys in the coffee room (who seemed to take pleasure in serving him) were at once employed on his several errands, insomuch that nobody else could come at a dish of tea until the Knight had got all his conveniences about him." Such was the coffee room in the *Spectator's* day.

THE COCOA-TREE was originally a coffee house on the south side of Pall Mall. When there grew up a need for "places of resort of a more elegant and refined character," chocolate houses came into vogue, and the

INTERIOR OF DICK'S COFFEE HOUSE
From the frontispiece to "The Coffee House—a dramatick Piece" (see chapter XXXII)



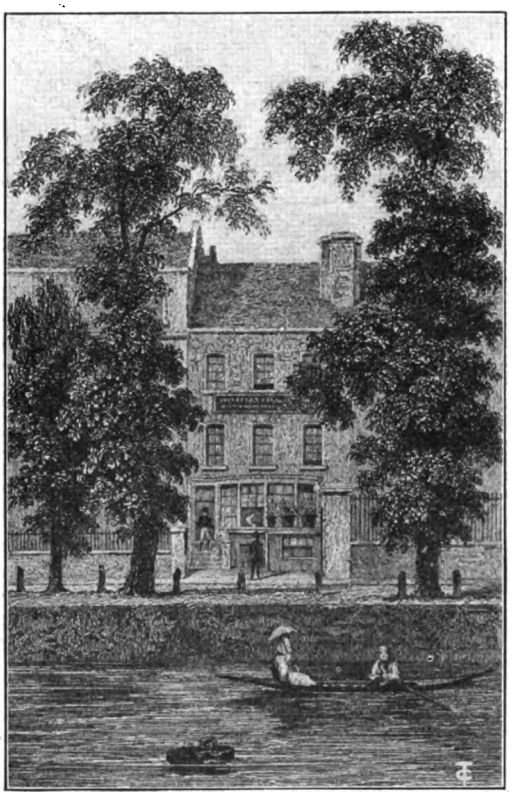
THE GRECIAN COFFEE HOUSE, DEVEREUX COURT
It was closed in 1843. From a drawing dated 1809

COCOA-TREE was the most famous of these. It was converted into a club in 1746.

WHITE'S chocolate house, established by Francis White about 1693 in St. James's Street, originally open to any one as a coffee house, soon became a private club, composed of "the most fashionable exquisites of the town and court." In its coffee-house days, the entrance was sixpence, as compared with the average penny fee of the other coffee houses. Escott refers to WHITE'S as being "the one specimen of the class to which it belongs, of a place at which, beneath almost the same roof, and always bearing the same name, whether as coffee house or club, the same class of persons has congregated during more than two hundred years."

Among hundreds of other coffee houses that flourished during the seventeenth and eighteenth centuries the following more notable ones are deserving of mention:

BAKER'S, 58 'Change Alley, for nearly half a century noted for its chops and steaks broiled in the coffee room and eaten hot from the gridiron; the BALTIC, in



DON SALTERO'S COFFEE HOUSE, CHEYNE WALK
From a steel engraving in the British Museum

Threadneedle Street, the rendezvous of brokers and merchants connected with the Russian trade; the BEDFORD, "under the Piazza, in Covent Garden," crowded every night with men of parts and "signalized for many years as the emporium of wit, the seat of criticism and the standard of taste"; the CHAPTER, in Paternoster Row, frequented by Chatterton and Goldsmith; CHILD'S, in St. Paul's Churchyard, one of the *Spectator's* houses, and much frequented by the clergy and fellows of the Royal Society; DICK'S, in Fleet Street, frequented by Cowper, and the scene of Rousseau's comedietta, entitled *The Coffee House;* ST. JAMES'S, in St. James's Street, frequented by Swift, Goldsmith, and Garrick; JERUSALEM, in Cowper's Court, Cornhill, frequented by merchants and captains connected with the commerce of China, India, and Australia; JONATHAN'S, in 'Change Alley, described by the *Tatler* as "the general mart of stock jobbers"; the LONDON, in Ludgate Hill, noted for its publishers' sales of stock and copyrights; MAN'S, in Scotland Yard, which took its name from the proprietor, Alexander Man, and was sometimes known as OLD MAN'S, or the ROYAL, to distinguish it from YOUNG MAN'S, LITTLE MAN'S, NEW MAN'S, etc., minor establishments in the neighborhood;[19] NANDO'S, in Fleet Street, the favorite haunt of Lord Thurlow and many professional loungers, attracted by the fame of the punch and the charms of the landlady; NEW ENGLAND AND NORTH AND SOUTH AMERICAN, in Threadneedle Street, having on its subscription list representatives of Barings, Rothschilds, and other wealthy establishments; PEELE'S, in Fleet Street, having a portrait of Dr. Johnson said to have been painted by Sir Joshua

[19] There were six places, all told, bearing the name "Man's". Alexander Man was coffee maker to William III.

THE BRITISH COFFEE HOUSE
IN COCKSPUR STREET
From a print published in 1770

THE FRENCH COFFEE HOUSE IN LONDON, SECOND HALF OF THE EIGHTEENTH CENTURY
From the original water-color drawing by Thomas Rowlandson

Reynolds; the PERCY, in Oxford Street, the inspiration for the *Percy Anecdotes;* the PIAZZA, in Covent Garden, where Macklin fitted up a large coffee room, or theater, for oratory, and Fielding and Foote poked fun at him; the RAINBOW, in Fleet Street, the second coffee house opened in London, having its token money; the SMYRNA, in Pall Mall, a "place to talk politics," and frequented by Prior and Swift; TOM KING'S, one of the old night houses of Covent Garden Market, "well known to all gentlemen to whom beds are unknown"; the TURK'S HEAD, 'Change Alley, which also had its tokens; the TURK'S HEAD, in the Strand, which was a favorite supping house for Dr. Johnson and Boswell; the FOLLY, a coffee house on a houseboat on the Thames, which became quite notorious during Queen Anne's reign.

JEAN RAMPONAUX
Au sein de la paix, goûter le plaisir
Chés soi s'amuser dans un doux loisir
Ou bien chez Magny s'aller divertir
C'étoit la vieille méthode
Lon vint aujourd'hui courir nos Badauds;
Sans les achever quitter leurs travaux;
Pourquoy c'est qu'ils vont chés Mons Ramponaux
Voila la Taverne a la mode.

RAMPONAUX' ROYAL DRUMMER, ONE OF THE MOST POPULAR OF THE EARLY PARISIAN CAFÉS

Started originally as a tavern, this hostelry added coffee to its cuisine and became famous in the reign of Louis XV
The illustration is from an early print used to advertise the "Royal Drummer's" attractions

CHAPTER XI

HISTORY OF THE EARLY PARISIAN COFFEE HOUSES

The introduction of coffee into Paris by Thévenot in 1657 — How Soliman Aga established the custom of coffee drinking at the court of Louis XIV — Opening the first coffee houses — How the French adaptation of the Oriental coffee house first appeared in the real French café of François Procope — The important part played by the coffee houses in the development of French literature and the stage — Their association with the Revolution and the founding of the Republic — Quaint customs and patrons — Historic Parisian cafés

IF we are to accept the authority of Jean La Roque, "before the year 1669 coffee had scarcely been seen in Paris, except at M. Thévenot's and at the homes of some of his friends. Nor had it been heard of except in the writings of travelers."

As noted in chapter V, Jean de Thévenot brought coffee into Paris in 1657. One account says that a decoction, supposed to have been coffee, was sold by a Levantine in the Petit Châtelet under the name of *cohove* or *cahoue* during the reign of Louis XIII, but this lacks confirmation. Louis XIV is said to have been served with coffee for the first time in 1664.

Soon after the arrival, in July, 1669, of the Turkish ambassador, Soliman Aga, it became noised abroad that he had brought with him for his own use, and that of his retinue, great quantities of coffee. He "treated several persons with it, both in the court and the city." At length "many accustomed themselves to it with sugar, and others who found benefit by it could not leave it off."

Within six months all Paris was talking of the sumptuous coffee functions of the ambassador from Mohammed IV to the court of Louis XIV.

Isaac D'Israeli best describes them in his *Curiosities of Literature:*

> On bended knee, the black slaves of the Ambassador, arrayed in the most gorgeous Oriental costumes, served the choicest Mocha coffee in tiny cups of egg-shell porcelain, hot, strong and fragrant, poured out in saucers of gold and silver, placed on embroidered silk doylies fringed with gold bullion, to the grand dames, who fluttered their fans with many grimaces, bending their piquant faces — be-rouged, be-powdered and be-patched — over the new and steaming beverage.

It was in 1669 or 1672 that Madame de Sévigné (Marie de Rabutin-Chantal; 1626 - 96), the celebrated French letter-writer, is said to have made that famous prophecy, "There are two things Frenchmen will never swallow — coffee and Racine's poetry," sometimes abbreviated into, "Racine and coffee will pass." What Madame really said, according to one authority, was that Racine was writing for Champmeslé, the actress, and not for posterity; again, of coffee she said, *"s'en dégoûterait comme d'un indigne favori* (People will become disgusted with it as with an unworthy favorite).

Larousse says the double judgment was wrongly attributed to Mme. de Sévigné. The celebrated aphorism, like many others, was forged later. Mme. de Sévigné said, "Racine made his comedies for the Champmeslé — not for the ages to come." This was in 1672. Four years later, she said to

COFFEE WAS FIRST SOLD AND SERVED PUBLICLY IN THE FAIR OF ST.-GERMAIN
From a Seventeenth-Century Print

her daughter, "You have done well to quit coffee. Mlle. de Mere has also given it up."

However it may have been, the amiable letter-writer was destined to live to see Frenchmen yielding at once to the lure of coffee and to the poetical artifices of the greatest dramatic craftsman of his day.

While it is recorded that coffee made slow progress with the court of Louis XIV, the next king, Louis XV, to please his mistress, du Barry, gave it a tremendous vogue. It is related that he spent $15,000 a year for coffee for his daughters.

Meanwhile, in 1672, one Pascal, an Armenian, first sold coffee publicly in Paris. Pascal, who, according to one account, was brought to Paris by Soliman Aga, offered the beverage for sale from a tent, which was also a kind of booth, in the fair of St.-Germain, supplemented by the service of Turkish waiter boys, who peddled it among the crowds from small cups on trays. The fair was held during the first two months of spring, in a large open plot just inside the walls of Paris and near the Latin Quarter. As Pascal's waiter boys circulated through the crowds on those chilly days the fragrant odor of freshly made coffee brought many ready sales of the steaming beverage; and soon visitors to the fair learned to look for the "little black" cupful of cheer, or *petit noir*, a name that still endures.

When the fair closed, Pascal opened a small coffee shop on the Quai de l'École, near the Pont Neuf; but his frequenters were of a type who preferred the beers and wines of the day, and coffee languished. Pascal continued, however, to send his waiter boys with their large coffee jugs, that were heated by lamps, through the streets of Paris and from door to door. Their cheery cry of "*café! café!*" became a welcome call to many a Parisian, who later missed his *petit noir* when Pascal gave up and moved on to London, where coffee drinking was then in high favor.

Lacking favor at court, coffee's progress was slow. The French smart set clung to its light wines and beers. In 1672, Maliban,

STREET COFFEE VENDER OF PARIS — PERIOD, 1672 TO 1689 — TWO SOUS PER DISH, SUGAR INCLUDED

another Armenian, opened a coffee house in the rue Bussy, next to the Metz tennis court near St.-Germain's abbey. He supplied tobacco also to his customers. Later he went to Holland, leaving his servant and partner, Gregory, a Persian, in charge. Gregory moved to the rue Mazarine, to be near the Comédie Française. He was succeeded in the business by Makara, another Persian, who later returned to Ispahan, leaving the coffee house to one Le Gantois, of Liége.

About this period there was a cripple-boy from Candia, known as le Candiot, who began to cry "coffee!" in the streets of Paris. He carried with him a coffee pot of generous size, a chafing-dish, cups, and all other implements necessary to his trade. He sold his coffee from door to door at two sous per dish, sugar included.

A Levantine named Joseph also sold coffee in the streets, and later had several coffee shops of his own. Stephen, from Aleppo, next opened a coffee house on Pont au Change, moving, when his business prospered, to more pretentious quarters in the rue St.-André, facing St.-Michael's bridge.

MANY OF THE EARLY PARISIAN COFFEE HOUSES FOLLOWED PASCAL'S LEAD AND AFFECTED ARMENIAN DECORATIONS
From a Seventeenth-Century Print

A CORNER OF THE HISTORIC CAFÉ DE PROCOPE SHOWING VOLTAIRE AND DIDEROT IN DEBATE
From a rare water color

All these, and others, were essentially the Oriental style of coffee house of the lower order, and they appealed principally to the poorer classes and to foreigners. "Gentlemen and people of fashion" did not care to be seen in this type of public house. But when the French merchants began to set up, first at St.-Germain's fair, "spacious apartments in an elegant manner, ornamented with tapestries, large mirrors, pictures, marble tables, branches for candles, magnificent lustres, and serving coffee, tea, chocolate, and other refreshments", they were soon crowded with people of fashion and men of letters.

In this way coffee drinking in public acquired a badge of respectability. Presently there were some three hundred coffee houses in Paris. The principal coffee men, in addition to plying their trade in the city, maintained coffee rooms in St.-Germain's and St.-Laurence's fairs. These were frequented by women as well as men.

The Progenitor of the Real Parisian Café

It was not until 1689, that there appeared in Paris a real French adaptation of the Oriental coffee house. This was the Café de Procope, opened by François Procope (Procopio Cultelli, or Cotelli) who came from Florence or Palermo. Procope was a *limonadier* (lemonade vender) who had a royal license to sell spices, ices, barley water, lemonade, and other such refreshments. He early added coffee to the list, and attracted a large and distinguished patronage.

Procope, a keen-witted merchant, made his appeal to a higher class of patrons than did Pascal and those who first followed him. He established his café directly opposite the newly opened Comédie Française, in the street then known as the rue des Fossés-St.-Germain, but now the rue de l'Ancienne Comédie. A writer of the period has left this description of the place: "The Café de Procope . . . was also called the Antre [cavern] de Procope, because it was very dark even in full day, and ill-lighted in the evenings; and because you often saw there a set of lank, sallow poets, who had somewhat the air of apparitions."

Because of its location, the Café de Procope became the gathering place of many noted French actors, authors, dramatists, and musicians of the eighteenth century. It was a veritable literary salon. Voltaire was a constant patron; and until the close of the historic café, after an existence of more than two centuries, his marble table and chair were among the precious relics of the coffee house. His favorite drink is said to have been a mixture of coffee and chocolate. Rousseau, author and philosopher; Beaumarchais, dramatist and financier; Diderot, the encyclopedist; Ste.-Foix, the abbé of Voisenon; de Belloy, author of the *Siege of Callais;* Lemierre, author of *Artaxerce;* Crébillon; Piron; La Chaussée; Fontenelle; Condorcet; and a host of lesser lights in the French arts, were habitués of François Procope's modest coffee saloon near the Comédie Française.

Naturally, the name of Benjamin Franklin, recognized in Europe as one of the world's foremost thinkers in the days of the American Revolution, was often spoken over the coffee cups of Café de Procope; and when the distinguished American died in 1790, this French coffee house went into deep mourning "for the great friend of republicanism." The walls, inside and out, were swathed in black bunting, and the statesmanship and scientific attainments of Franklin were acclaimed by all frequenters.

The Café de Procope looms large in the annals of the French Revolution. During the turbulent days of 1789 one could find at the tables, drinking coffee or stronger beverages, and engaged in debate over the burning questions of the hour, such characters as Marat, Robespierre, Danton, Hébert, and Desmoulins. Napoleon Bonaparte, then a poor artillery officer seeking a commission, was also there. He busied himself largely in playing chess, a favorite recreation of the early Parisian coffee-house patrons. It is related that François Procope once compelled young Bonaparte to leave his hat for security while he sought money to pay his coffee score.

After the Revolution, the Café de Procope lost its literary prestige and sank to the level of an ordinary restaurant. During the last half of the nineteenth century, Paul Verlaine, bohemian, poet, and leader of the symbolists, made the Café de Procope his haunt; and for a time it regained some of its lost popularity. The Restaurant Procope still survives at 13 rue de l'Ancienne Comédie.

History records that, with the opening of the Café de Procope, coffee became firmly established in Paris. In the reign of Louis XV there were 600 cafés in Paris. At the close of the eighteenth century there were more than 800. By 1843 the number had increased to more than 3000.

The Development of the Cafés

Coffee's vogue spread rapidly, and many cabarets and famous eating houses began to add it to their menus. Among these was the Tour d'Argent (silver tower), which had been opened on the Quai de la Tournelle in 1582, and speedily became Paris's most fashionable restaurant. It still is one of the chief attractions for the epicure, retaining the reputation for its cooking that drew a host of world leaders, from Napoleon to Edward VII, to its quaint interior.

Another tavern that took up coffee after Procope, was the Royal Drummer, which Jean Ramponaux established at the Courtille des Porcherons and which followed Magny's. His hostelry rightly belongs to the tavern class, although coffee had a

THE CAFÉ DE PROCOPE IN 1743
From an engraving by Bosredon

THE CASHIER'S COUNTER IN A PARIS COFFEE HOUSE OF 1782
From a drawing by Rétif de la Bretonne

prominent place on its menu. It became notorious for excesses and low-class vices during the reign of Louis XV, who was a frequent visitor. Low and high were to be found in Ramponaux's cellar, particularly when some especially wild revelry was in prospect. Marie Antoinette once declared she had her most enjoyable time at a wild *farandole* in the Royal Drummer. Ramponaux was taken to its heart by fashionable Paris; and his name was used as a trade mark on furniture, clothes, and foods.

The popularity of Ramponaux's Royal Drummer is attested by an inscription on an early print showing the interior of the café. Translated, it reads:

The pleasures of ease untroubled to taste,
The leisure of home to enjoy without haste,
Perhaps a few hours at Magny's to waste,
Ah, that was the old-fashioned way!
Today all our laborers, everyone knows,
Go running away ere the working hours close,
And why? They must be at Monsieur Ramponaux'!
Behold, the new style of café!

When coffee houses began to crop up rapidly in Paris, the majority centered in the Palais Royal, "that garden spot of beauty, enclosed on three sides by three tiers of galleries," which Richelieu had erected in 1636, under the name of Palais Cardinal, in the reign of Louis XIII. It became known as the Palais Royal in 1643; and soon after the opening of the Café de Procope, it began to blossom out with many attractive coffee stalls, or rooms, sprinkled among the other shops that occupied the galleries overlooking the gardens.

Life In The Early Coffee Houses

Diderot tells in 1760, in his *Rameau's Nephew,* of the life and frequenters of one of the Palais Royal coffee houses, the Regency (*Café de la Régence*):

In all weathers, wet or fine, it is my practice to go toward five o'clock in the evening to take a turn in the Palais Royal. . . . If the weather is too cold or too wet I take shelter in the Regency coffee house. There I amuse myself by looking on while they play chess. Nowhere in the world do they play chess as skillfully as in Paris and nowhere in Paris as they do at this coffee house; 'tis here you see Légal the profound, Philidor the subtle, Mayot the solid; here you see the most astounding moves, and listen to the sorriest talk, for if a man be at once a wit and a great chess player, like Légal, he may also be a great chess player and a sad simpleton, like Joubert and Mayot.

The beginnings of the Regency coffee house are associated with the legend that Lefévre, a Parisian, began peddling coffee in the streets of Paris about the time Procope opened his café in 1689. The story has it that Lefévre later opened a café near the Palais Royal, selling it in 1718 to one Leclerc, who named it the Café de la Régence, in honor of the regent of Orleans, a name that still endures on a broad sign over its doors. The nobility had their rendezvous there after having paid their court to the regent.

To name the patrons of the Café de la Régence in its long career would be to outline a history of French literature for more than two centuries. There was Philidor the "greatest theoretician of the eighteenth century, better known for his chess than his music"; Robespierre, of the Revolution, who once played chess with a girl — disguised as a boy — for the life of her lover; Napoleon, who was then noted more for his chess than his empire-building propensities; and Gambetta, whose loud voice, generally raised in debate, disturbed one

THE CAFÉ FOY IN THE PALAIS ROYAL, 1789
From an engraving by Bosredon

chess player so much that he protested because he could not follow his game. Voltaire, Alfred de Musset, Victor Hugo, Théophile Gautier, J. J. Rousseau, the Duke of Richelieu, Marshall Saxe, Buffon, Rivarol, Fontenelle, Franklin, and Henry Murger are names still associated with memories of this historic café. Marmontel and Philidor played there at their favorite game of chess. Diderot tells in his *Memoirs* that his wife gave him every day nine sous to get his coffee there. It was in this establishment that he worked on his *Encyclopedia.*

Chess is today still in favor at the Régence, although the players are not, as were the earlier patrons, obliged to pay by the hour for their tables with extra charges for candles placed by the chess-boards. The present Café de la Régence is in the rue St.-Honoré, but retains in large measure its aspect of olden days.

Michelet, the historian, has given us a rhapsodic pen picture of the Parisian cafés under the regency:

Paris became one vast café. Conversation in France was at its zenith. There were less eloquence and rhetoric than in '89. With the exception of Rousseau, there was no orator to cite. The intangible flow of wit was as spontaneous as possible. For this sparkling outburst there is no doubt that honor should be ascribed in part to the auspicious revolution of the times, to the great event which created new customs, and even modified human temperament — the advent of coffee.

Its effect was immeasurable, not being weakened and neutralized as it is today by the brutalizing influence of tobacco. They took snuff, but did not smoke. The cabarét was dethroned, the ignoble cabarét, where, during the reign of Louis XIV, the youth of the city rioted amid wine-casks in the company of light women. The night was less thronged with chariots. Fewer lords found a resting place in the gutter. The elegant shop, where conversation flowed, a salon rather than a shop, changed and ennobled its customs. The reign of coffee is that of temperance. Coffee, the beverage of sobriety, a powerful mental stimulant, which, unlike spirituous liquors, increases clearness and lucidity; coffee, which suppresses the vague, heavy fantasies of the imagination, which from the perception of reality brings forth the sparkle and sunlight of truth; coffee anti-erotic. . . .

The three ages of coffee are those of modern thought; they mark the serious moments of the brilliant epoch of the soul.

Arabian coffee is the pioneer, even before 1700. The beautiful ladies that you see in the fashionable rooms of Bonnard, sipping from their tiny cups — they are enjoying the aroma of the finest coffee of Arabia. And of what are they chatting? Of the seraglio, of Chardin, of the Sultana's coiffure, of the *Thousand and One Nights* (1704). They compare the ennui of Versailles with the paradise of the Orient.

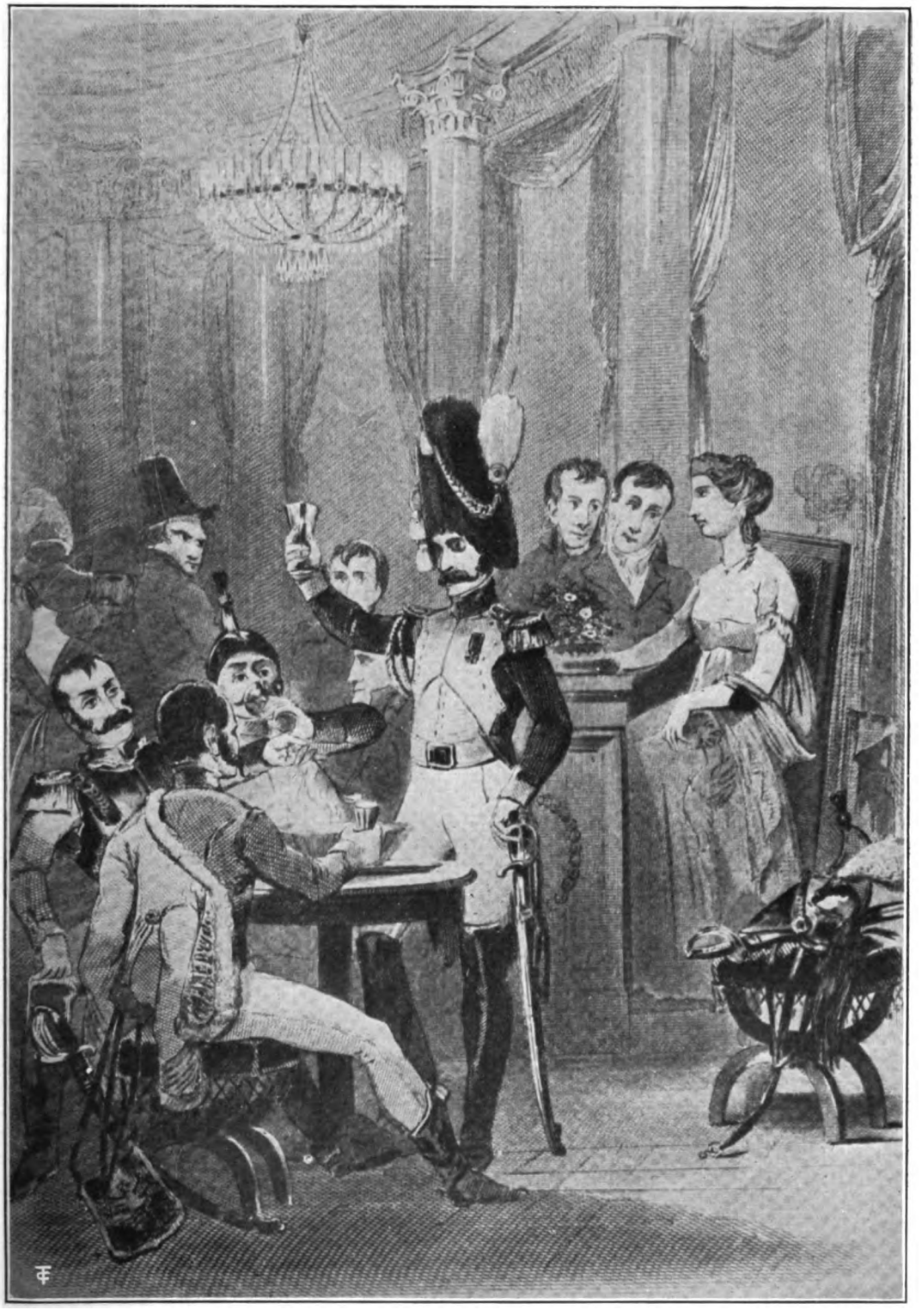
Very soon, in 1710 - 1720, commences the reign of Indian coffee, abundant, popular, comparatively cheap. Bourbon, our Indian island, where coffee was transplanted, suddenly realizes unheard-of happiness. This coffee of volcanic lands acts as an explosive on the Regency and the new spirit of things. This sudden cheer, this laughter of the old world, these overwhelming flashes of wit, of which the sparkling verse of Voltaire, the *Persian Letters*, give us a faint idea! Even the most brilliant books have not succeeded in catching on the wing this airy chatter, which comes, goes, flies elusively. This is that spirit of ethereal nature which, in the *Thousand and One Nights*, the enchanter confined in his bottle. But what phial would have withstood that pressure?

The lava of Bourbon, like the Arabian sand, was unequal to the demand. The Regent recognized this and had coffee transported to the fertile soil of our Antilles. The strong coffee of Santo Domingo, full, coarse, nourishing as well as stimulating, sustained the adult population of that period, the strong age of the encyclopedia. It was drunk by Buffon, Diderot, Rousseau, added its glow to glowing souls, its light to the penetrating vision of the prophets gathered in the cave of Procope, who saw at the bottom of the black beverage the future rays of '89. Danton, the terrible Danton, took several cups of coffee before mounting the tribune. 'The horse must have its oats,' he said.

The vogue of coffee popularized the use of sugar, which was then bought by the ounce at the apothecary's shop. Dufour says that in Paris they used to put so much sugar in the coffee that "it was nothing but a syrup of blackened water." The ladies were wont to have their carriages stop in front of the Paris cafés and to have their coffee served to them by the porter on saucers of silver.

Every year saw new cafés opened. When they became so numerous, and competition grew so keen, it was necessary to invent new attractions for customers. Then was born the *café chantant*, where songs, monologues, dances, little plays and farces (not always in the best taste), were provided to amuse the frequenters. Many of these *cafés chantants* were in the open air along the Champs-Elysées. In bad weather, Paris provided the pleasure-seeker with the Eldorado, Alcazar d'Hiver, Scala, Gaieté, Concert du XIXme Siécle, Folies Bobino, Rambuteau, Concert Européen, and countless other meeting places where one could be served with a cup of coffee.

As in London, certain cafés were noted for particular followings, like the military, students, artists, merchants. The politi-



THE CAFÉ DES MILLE COLONNES IN 1811
From an engraving by Bosredon

cians had their favorite resorts. Says Salvandy:

> These were senates in miniature; here mighty political questions were discussed; here peace and war were decided upon; here generals were brought to the bar of justice . . . distinguished orators were victoriously refuted, ministers heckled upon their ignorance, their incapacity, their perfidy, their corruption. The café is in reality a French institution; in them we find all these agitations and movements of men, the like of which is unknown in the English tavern. No government can go against the sentiment of the cafés. The Revolution took place because they were for the Revolution. Napoleon reigned because they were for glory. The Restoration was shattered, because they understood the Charter in a different manner.

In 1700 appeared the *Portefeuille Galant*, containing conversations of the cafés.

The Cafés in the French Revolution

The Palais Royal coffee houses were centers of activity in the days preceding and following the Revolution. A picture of them in the July days of 1789 has been left by Arthur Young, who was visiting Paris at that time:

> The coffee houses present yet more singular and astounding spectacles; they are not only crowded within, but other expectant crowds are at the doors and windows, listening *à gorge déployée* to certain orators who from chairs or tables harangue each his little audience; the eagerness with which they are heard, and the thunder of applause they receive for every sentiment of more than common hardiness or violence against the government, cannot easily be imagined.

The Palais Royal teemed with excited Frenchmen on the fateful Sunday of July 12, 1789. The moment was a tense one, when, coming out of the Café Foy, Camille Desmoulins, a youthful journalist, mounted a table and began the harangue that precipitated the first overt act of the French Revolution. Blazing with a white hot frenzy, he so played upon the passions of the mob that at the conclusion of his speech he and his followers "marched away from the Café on their errand of Revolution." The Bastille fell two days later.

As if abashed by its reputation as the starting point of the mob spirit of the Revolution, Café Foy became in after years a sedate gathering-place of artists and literati. Up to its close it was distinguished among other famous Parisian cafés for its exclusiveness and strictly enforced rule of "no smoking."

[1] Salvandy, Narcisse-Achille. *Influence des Cafés sur les Moeurs Politiques.*

Even from the first the Parisian cafés catered to all classes of society; and, unlike the London coffee houses, they retained this distinctive characteristic. A number of them early added other liquid and substantial refreshments, many becoming out-and-out restaurants.

Coffee-House Customs and Patrons

Coffee's effect on Parisians is thus decribed by a writer of the latter part of the eighteenth century:

> I think I may safely assert that it is to the establishment of so many cafés in Paris that is due the urbanity and mildness discernible upon most faces. Before they existed, nearly everybody passed his time at the cabarét, where even business matters were discussed. Since their establishment, people assemble to hear what is going on, drinking and playing only in moderation, and the consequence is that they are more civil and polite, at least in appearance.

Montesquieu's satirical pen pictured in his *Persian Letters* the earliest cafés as follows:

> In some of these houses they talk news; in others, they play draughts. There is one where they prepare the coffee in such a manner that it inspires the drinkers of it with wit; at least, of all those who frequent it, there is not one person in four who does not think he has more wit after he has entered that house. But what offends me in these wits is that they do not make themselves useful to their country.

Montesquieu encountered a geometrician outside a coffee house on the Pont Neuf, and accompanied him inside. He describes the incident in this manner:

> I observe that our geometrician was received there with the utmost officiousness, and that the coffee house boys paid him much more respect than two musqueteers who were in a corner of the room. As for him, he seemed as if he thought himself in an agreeable place; for he unwrinkled his brows a little and laughed, as if he had not the least tincture of geometrician in him. . . . He was offended at every start of wit, as a tender eye is by too strong a light. . . . At last I saw an old man enter, pale and thin, whom I knew to be a coffee house politician before he sat down; he was not one of those who are never to be intimidated by disasters, but always prophesy of victories and success; he was one of those timorous wretches who are always boding ill.

Café Momus and Café Rotonde figure conspicuously in the record of French bohemianism. The Momus stood near the right bank of the River Seine in rue des Prêtres St.-Germain, and was known as the home of the bohemians. The Rotonde stood on the left bank at the corner of the rue de

THE CAFÉ DE PARIS IN 1843
From an engraving by Bosredon

l'École de Médecine and the rue Hautefeuille.

Alexandre Schanne has given us a glimpse of bohemian life in the early cafés. He lays his scene in the Café Rotonde, and tells how a number of poor students were wont to make one cup of coffee last the coterie a full evening by using it to flavor and to color the one glass of water shared in common. He says:

> Every evening, the first comer at the waiter's inquiry, "What will you take, sir?" never failed to reply, "Nothing just at present, I am waiting for a friend." The friend arrived, to be assailed by the brutal question, "Have you any money?" He would make a despairing gesture in the negative, and then add, loud enough to be heard by the *dame du comptoir*, "By Jove, no; only fancy, I left my purse on my console-table, with gilt feet, in the purest Louis XV style. Ah! what a thing it is to be forgetful." He would sit down, and the waiter would wipe the table as if he had something to do. A third would come, who was sometimes able to reply, "Yes, I have ten sous." "Good!" we would reply; "order a cup of coffee, a glass and a water bottle; pay and give two sous to the waiter to secure his silence." This would be done. Others would come and take their places beside us, repeating to the waiter the same chorus, "We are with this gentleman." Frequently we would be eight or nine sitting at the same table, and only one customer. Whilst smoking and reading the papers we would, however, pass the glass and bottle. When the water began to run short, as on a ship in distress, one of us would have the impudence to call out, "Waiter, some water!" The master of the establishment, who understood our situation, had no doubt given orders for us to be left alone, and made his fortune without our help. He was a good fellow and an intelligent one, having subscribed to all the scientific journals of Europe, which brought him the custom of foreign students.

Another café perpetuating the best traditions of the Latin Quarter was the Vachette, which survived until the death of Jean Moréas in 1911. The Vachette is usually cited by antiquarians as a model of circumspection as compared with the scores of cafés in the Quarter that were given up to debaucheries. One writer puts it: "The Vachette traditions leaned more to scholarship than sensuality."

In the late seventeenth and early eighteenth centuries the Parisian café was truly a coffee house; but as many of the patrons began to while away most of their waking hours in them, the proprietors added other beverages and food to hold their patronage. Consequently, we find listed among the cafés of Paris some houses that are more accurately described as restaurants, although they may have started their careers as coffee houses.

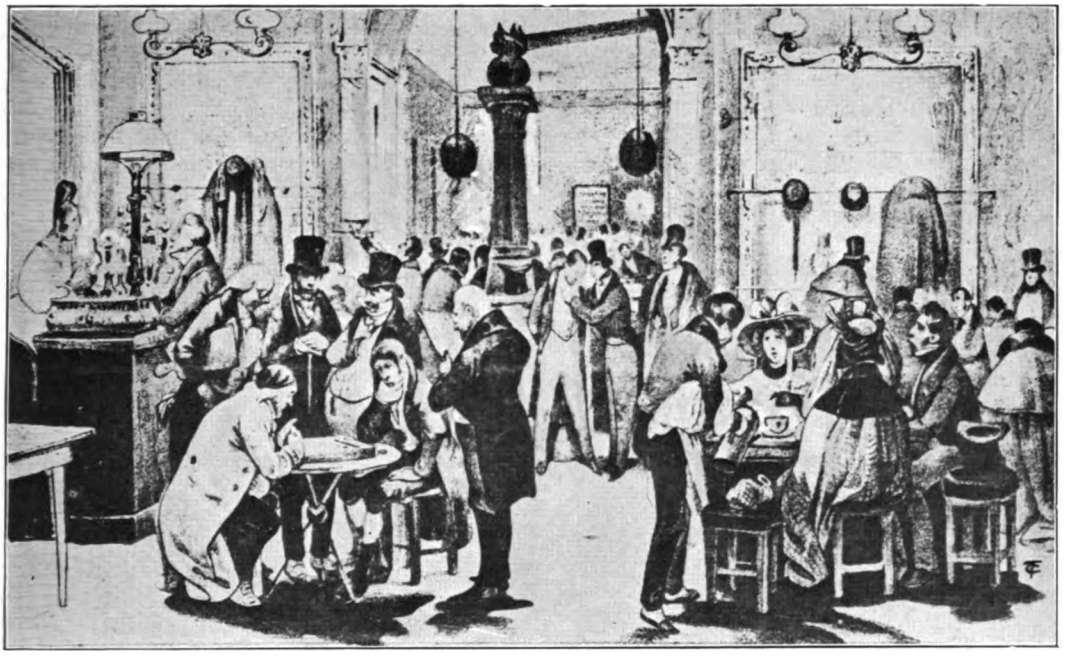
Historic Parisian Cafés

Some of the historic cafés are still thriving in their original locations, although the majority have now passed into oblivion. Glimpses of the more famous houses are to be found in the novels, poetry, and essays written by the French literati who patronized them. These first-hand accounts give insights that are sometimes stirring, often amusing, and frequently revolting — such as the assassination of St.-Fargeau in Février's low-vaulted cellar café in the Palais Royal.

There is Magny's, originally the haunt of such literary men as Gautier, Taine, Saint-Victor, Turguenieff, de Goncourt, Soulie, Renan, Edmond. In recent years the old Magny's was razed, and on its site was built the modern restaurant of the same name, but in a style that has no resemblance to its predecessor. Even the name of the street has been changed, from rue Contrescarpe to the rue Mazet.

Méot's, the Véry, Beauvilliers', Massé's, the Café Chartres, the Troi Fréres Provençaux, and the du Grand Commun, all situated in the Palais Royal, are cafés that figured conspicuously in the French Revolution, and are closely identified with the French stage and literature. Méot's and Massé's were the trysting places of the Royalists in the days preceding the outbreak, but welcomed the Revolutionists after they came in power. The Chartres was notorious as the gathering place of young aristocrats who escaped the guillotine, and, thus made bold, often called their like from adjoining cafés to partake in some of their plans for restoration of the empire. The Trois Fréres Provençaux, well known for its excellent and costly dinners, is mentioned by Balzac, Lord Lytton, and Alfred de Musset in some of their novels. The Café du Grand Commun appears in Rousseau's *Confessions* in connection with the play *Devin du Village*.

Among the most famous of the cafés on the Rue St. Honoré were Venua's, patronized by Robespierre and his companions of the Revolution, and perhaps the scene of the inhuman murder of Berthier and its revolting aftermath; the Mapinot, which has gone down in café history as the scene of the banquet to Archibald Alison, the 22-



INTERIOR OF A TYPICAL PARISIAN CAFÉ OF THE EARLY NINETEENTH CENTURY

year-old historian; and Voisin's café, around which still cling traditions of such literary lights as Zola, Alphonse Daudet, and Jules de Goncourt.

Perhaps the boulevard des Italiens had, and still has, more fashionable cafés than any other section of the French capital. The Tortoni, opened in the early days of the Empire by Velloni, an Italian lemonade vender, was the most popular of the boulevard cafés, and was generally thronged with fashionables from all parts of Europe. Here Louis Blanc, historian of the Revolution, spent many hours in the early days of his fame. Talleyrand; Rossini, the musician; Alfred Stevens and Edouard Manet, artists, are some of the names still linked with the traditions of the Tortoni. Farther down the boulevard were the Café Riche, Maison Dorée, Café Anglais, and the Café de Paris. The Riche and the Dorée, standing side by side, were both high-priced and noted for their revelries. The Anglais, which came into existence after the snuffing out of the Empire, was also distinguished for its high prices, but in return gave an excellent dinner and fine wines. It is told that even during the siege of Paris the Anglais offered its patrons "such luxuries as ass, mule, peas, fried potatoes, and champagne."

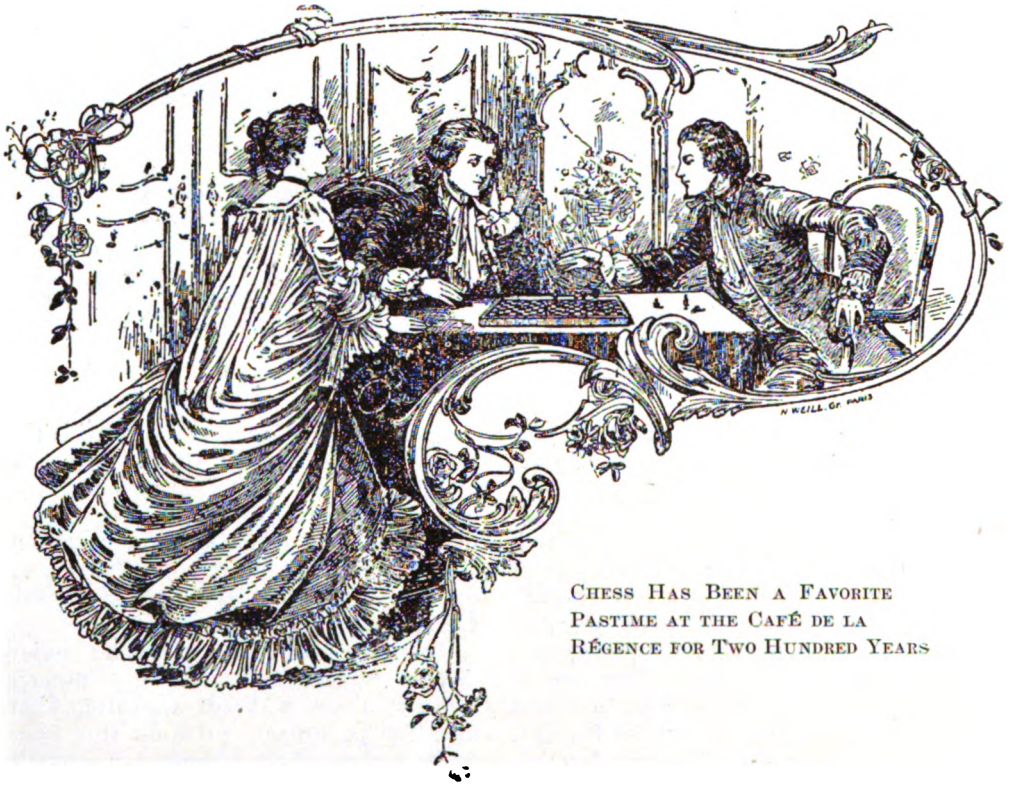
Probably the Café de Paris, which came into existence in 1822, in the former home of the Russian Prince Demidoff, was the most richly equipped and elegantly conducted of any café in Paris in the nineteenth century. Alfred de Musset, a frequenter, said, "you could not open its doors for less than 15 francs."

The Café Littéraire, opened on boulevard Bonne Nouvelle late in the nineteenth century, made a direct appeal to literary men for patronage, printing this footnote on its menu: "Every customer spending a franc in this establishment is entitled to one volume of any work to be selected from our vast collection."

The names of Parisian cafés once more or less famous are legion. Some of them are:

The Café Laurent, which Rousseau was forced to leave after writing an especially bitter satire; the English café, in which eccentric Lord Wharton made merry with the Whig habitués; the Dutch café, the haunt of Jacobites; Terre's, in the rue Neuve des Petits Champs, which Thackeray described in *The Ballad of Bouillabaisse*; Maire's, in the boulevard St.-Denis, which dates back beyond 1850; the Café Madrid, in the boulevard Montmartre, of which Carjat, the Spanish lyric poet, was an attraction; the Café de la Paix, in the

boulevard des Capucines, the resort of Second Empire Imperialists and their spies; the Café Durand, in the place de la Madeleine, which started on a plane with the high-priced Riche, and ended its career early in the twentieth century; the Rocher de Cancale, memorable for its feasts and high-living patrons from all over Europe; the Café Guerbois, near the rue de St. Petersbourg, where Manet, the impressionist, after many vicissitudes, won fame for his paintings and held court for many years; the Chat Noir, on the rue Victor Massé at Montmartre, a blend of café and concert hall, which has since been imitated widely, both in name and feature.



CHESS HAS BEEN A FAVORITE PASTIME AT THE CAFÉ DE LA RÉGENCE FOR TWO HUNDRED YEARS

CHAPTER XII

INTRODUCTION OF COFFEE INTO NORTH AMERICA

Captain John Smith, founder of the Colony of Virginia, is the first to bring to North America a knowledge of coffee in 1607 — The coffee grinder on the Mayflower — Coffee drinking in 1668 — William Penn's coffee purchase in 1683 — Coffee in colonial New England — The psychology of the Boston "tea party," and why the United States became a nation of coffee drinkers instead of tea drinkers, like England — The first coffee license to Dorothy Jones in 1670 — The first coffee house in New England — Notable coffee houses of old Boston — A sky-scraper coffee house

UNDOUBTEDLY the first to bring a knowledge of coffee to North America was Captain John Smith, who founded the Colony of Virginia at Jamestown in 1607. Captain Smith became familiar with coffee in his travels in Turkey.

Although the Dutch also had early knowledge of coffee, it does not appear that the Dutch West India Company brought any of it to the first permanent settlement on Manhattan Island (1624). Nor is there any record of coffee in the cargo of the Mayflower (1620), although it included a wooden mortar and pestle, later used to make "coffee powder."

In the period when New York was New Amsterdam, and under Dutch occupancy (1624 - 64), it is possible that coffee may have been imported from Holland, where it was being sold on the Amsterdam market as early as 1640, and where regular supplies of the green bean were being received from Mocha in 1663; but positive proof is lacking. The Dutch appear to have brought tea across the Atlantic from Holland before coffee. The English may have introduced the coffee drink into the New York colony between 1664 and 1673. The earliest reference to coffee in America is 1668 [1], at which time a beverage made from the roasted beans, and flavored with sugar or honey, and cinnamon, was being drunk in New York.

Coffee first appears in the official records of the New England colony in 1670. In 1683, the year following William Penn's settlement on the Delaware, we find him buying supplies of coffee in the New York market and paying for them at the rate of eighteen shillings and nine pence per pound.[2]

Coffee houses patterned after the English and Continental prototypes were soon established in all the colonies. Those of New York and Philadelphia are described in separate chapters. The Boston houses are described at the end of this chapter.

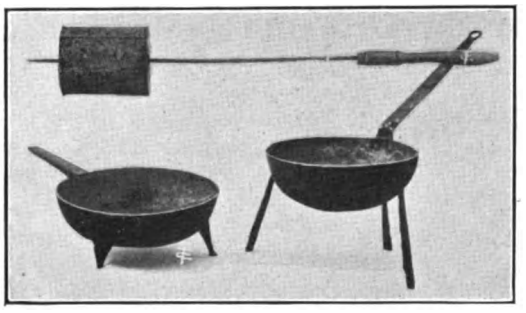
Norfolk, Chicago, St. Louis, and New Orleans also had them. Conrad Leonhard's coffee house at 320 Market Street. St. Louis, was famous for its coffee and coffee cake, from 1844 to 1905, when it became a bakery and lunch room, removing in 1919 to Eighth and Pine Streets.

In the pioneer days of the great west, coffee and tea were hard to get; and, instead of them, teas were often made from garden herbs, spicewood, sassafras-roots,

[1] Singleton, Esther. *Dutch New York.* New York, 1909. (p. 132.)

[2] Bishop, J. Leander. *A History of American Manufactures, 1608 to 1860.* New York, 1864. (Vol. 1; p. 259.)

and other shrubs, taken from the thickets[3]. In 1839, in the city of Chicago, one of the minor taverns was known as the Lake Street coffee house. It was situated at the corner of Lake and Wells Streets. A number of hotels, which in the English sense might more appropriately be called inns, met a demand for modest accommodation[4]. Two coffee houses were listed in the Chicago



TYPES OF COLONIAL COFFEE ROASTERS

The cylinder at the top of the picture was revolved by hand in the fireplace; the skillets were set in the smouldering ashes

directories for 1843 and 1845, the Washington coffee house, 83 Lake Street; and the Exchange coffee house, Clarke Street between La Salle and South Water Streets.

The oldtime coffee houses of New Orleans were situated within the original area of the city, the section bounded by the river, Canal Street, Esplanade Avenue and Rampart Street. In the early days most of the big business of the city was transacted in the coffee houses. The *brûleau,* coffee with orange juice, orange peel, and sugar, with cognac burned and mixed in it, originated in the New Orleans coffee house, and led to its gradual evolution into the saloon.

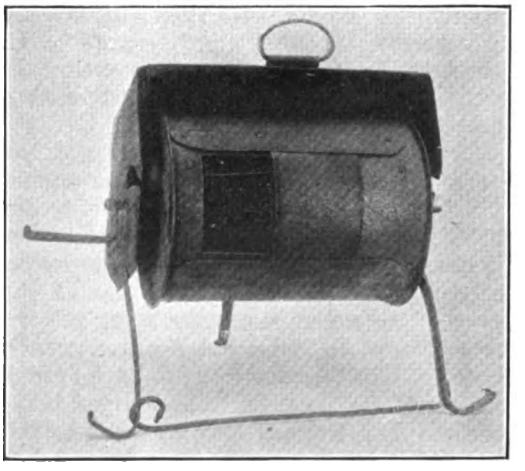
How the United States Became a Nation of Coffee Drinkers

Coffee, tea, and chocolate were introduced into North America almost simultaneously in the latter part of the seventeenth century. In the first half of the eighteenth century, tea had made such progress in England, thanks to the propaganda of the British East India Company, that, being moved to extend its use in the colonies, the directors turned their eyes first in the direction of North America. Here, however, King George spoiled their well-laid plans by his unfortunate stamp act of 1765, which caused the colonists to raise the cry of "no taxation without representation."

Although the act was repealed in 1766, the right to tax was asserted, and in 1767 was again used, duties being laid on paints, oils, lead, glass, and tea. Once more the colonists resisted; and, by refusing to import any goods of English make, so distressed the English manufacturers that Parliament repealed every tax save that on tea. Despite the growing fondness for the beverage in America, the colonists preferred to get their tea elsewhere to sacrificing their principles and buying it from England. A brisk trade in smuggling tea from Holland was started.

In a panic at the loss of the most promising of its colonial markets, the British East India Company appealed to Parliament for aid, and was permitted to export tea, a privilege it had never before enjoyed. Cargoes were sent on consignment to selected commissioners in Boston, New York, Philadelphia, and Charleston. The story of the subsequent happenings properly belongs in a book on tea. It is sufficient here to refer to the climax of the agitation against the fateful tea tax, because it is undoubtedly responsible for our becoming a nation of coffee drinkers instead of one of tea drinkers, like England.

The Boston "tea party" of 1773, when citizens of Boston, disguised as Indians, boarded the English ships lying in Boston harbor and threw their tea cargoes into the

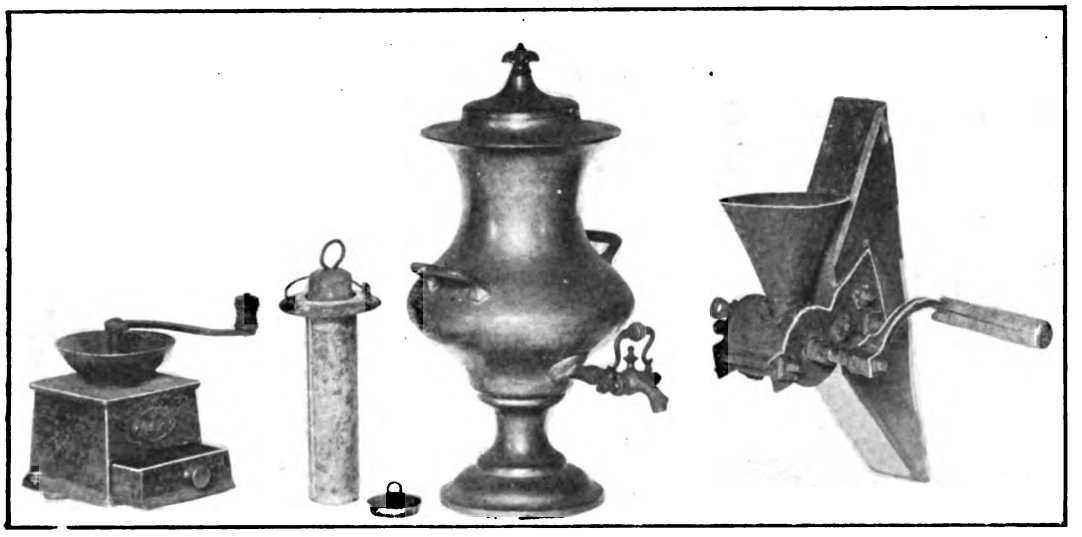


AN EARLY FAMILY COFFEE ROASTER

This machine, known in Holland as a "Coffee Burner," was used late in the 18th century in New England. It hung in the fireplace or stood in the embers

[3] Patterson, Robert W. *Early Society in Southern Illinois.* Chicago, 1881.

[4] Andreas, A. T. *History of Chicago.* Chicago, 1884.



HISTORICAL RELICS ASSOCIATED WITH THE EARLY DAYS OF COFFEE IN NEW ENGLAND

These exhibits are in the Museum of the Maine Historical Society at Portland. On the left is Kenrick's Patent coffee mill. In the center is a Britannia urn with an iron bar for heating the liquid. The bar was encased in a tin receptacle that hung inside the cover. On the right is a wall type of coffee or spice grinder

bay, cast the die for coffee; for there and then originated a subtle prejudice against "the cup that cheers", which one hundred and fifty years have failed entirely to overcome. Meanwhile, the change wrought in our social customs by this act, and those of like nature following it, in the New York, Pennsylvania, and Charleston colonies, caused coffee to be crowned "king of the American breakfast table", and the sovereign drink of the American people.

Coffee in Colonial New England

The history of coffee in colonial New England is so closely interwoven with the story of the inns and taverns that it is difficult to distinguish the genuine coffee house, as it was known in England, from the public house where lodgings and liquors were to be had. The coffee drink had strong competition from the heady wines, the liquors, and imported teas, and consequently it did not attain the vogue among the colonial New Englanders that it did among Londoners of the late seventeenth and early eighteenth centuries.

Although New England had its coffee houses, these were actually taverns where coffee was only one of the beverages served to patrons. "They were", says Robinson, "generally meeting places of those who were conservative in their views regarding church and state, being friends of the ruling administration. Such persons were terms 'Courtiers' by their adversaries, the Dissenters and Republicans."

Most of the coffee houses were established in Boston, the metropolis of the Massachusetts Colony, and the social center of New England. While Plymouth, Salem, Chelsea, and Providence had taverns that served coffee, they did not achieve the name and fame of some of the more celebrated coffee houses in Boston

It is not definitely known when the first coffee was brought in; but it is reasonable to suppose that it came as part of the household supplies of some settler (probably between 1660 and 1670), who had become acquainted with it before leaving England. Or it may have been introduced by some British officer, who in London had made the rounds of the more celebrated coffee houses of the latter half of the seventeenth century.

The First Coffee License

According to early town records of Boston, Dorothy Jones was the first to be licensed to sell "coffee and cuchaletto," the latter being the seventeenth-century spelling for chocolate or cocoa. This license is dated 1670, and is said to be the first written reference to coffee in the Massachusetts Colony. It is not stated whether Dorothy Jones was a vender of the coffee drink or of "coffee powder," as ground coffee was known in the early days.

THE MAYFLOWER "COFFEE GRINDER"
Mortar and pestle for "braying" coffee to make coffee powder, brought over in the Mayflower by the parents of Peregrine White

There is some question as to whether Dorothy Jones was the first to sell coffee as a beverage in Boston. Londoners had known and drunk coffee for eighteen years before Dorothy Jones got her coffee license. British government officials were frequently taking ship from London to the Massachusetts Colony, and it is likely that they brought tidings and samples of the coffee the English gentry had lately taken up. No doubt they also told about the new-style coffee houses that were becoming popular in all parts of London. And it may be assumed that their tales caused the landlords of the inns and taverns of colonial Boston to add coffee to their lists of beverages.

New England's First Coffee House

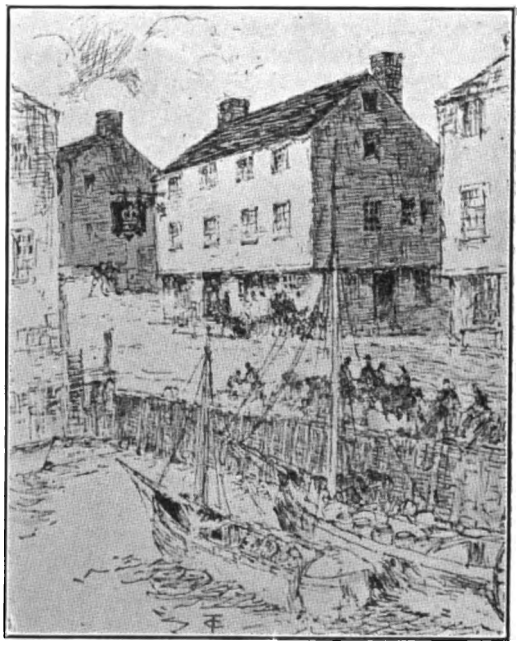
The name coffee house did not come into use in New England until late in the seventeenth century. Early colonial records do not make it clear whether the London coffee house or the Gutteridge coffee house was the first to be opened in Boston with that distinctive title. In all likelihood the London is entitled to the honor, for Samuel Gardner Drake in his *History and Antiquities of the City of Boston,* published in 1854, says that "Benj. Harris sold books there in 1689." Drake seems to be the only historian of early Boston to mention the London coffee house.

Granting that the London coffee house was the first in Boston, then the Gutteridge coffee house was the second. The latter stood on the north side of State Street, between Exchange and Washington Streets, and was named after Robert Gutteridge, who took out an innkeeper's license in 1691. Twenty-seven years later, his widow, Mary Gutteridge, petitioned the town for a renewal of her late husband's permit to keep a public coffee house.

The British coffee house, which became the American coffee house when the crown officers and all things British became obnoxious to the colonists, also began its career about the time Gutteridge took out his license. It stood on the site that is now 66 State Street, and became one of the most widely known coffee houses in colonial New England.

Of course, there were several inns and taverns in existence in Boston long before coffee and coffee houses came to the New England metropolis. Some of these taverns took up coffee when it became fashionable in the colony, and served it to those patrons who did not care for the stronger drinks.

The earliest known inn was set up by Samuel Cole in Washington Street, midway between Faneuil Hall and State Street. Cole was licensed as a "comfit maker" in 1634, four years after the founding of Boston; and two years later, his inn was the



THE CROWN COFFEE HOUSE, BOSTON
One of the first in New England to bear the distinctive name of coffee house; opened in 1711 and burned down in 1780

COFFEE MAKING AND SERVING DEVICES USED IN THE MASSACHUSETTS COLONY

These exhibits are in the Museum of the Essex Institute at Salem, Mass. Top row, left and right, Britannia serving pots; center, Britannia table urn; bottom row, left end, tin coffee making pot; center, Britannia serving pots; right end, tin French drip pot

temporary abiding place of the Indian chief Miantonomoh and his red warriors, who came to visit Governor Vane. In the following year, the Earl of Marlborough found that Cole's inn was so "exceedingly well governed," and afforded so desirable privacy, that he refused the hospitality of Governor Winthrop at the governor's mansion.

Another popular inn of the day was the Red Lyon, which was opened in 1637 by Nicholas Upshall, the Quaker, who later was hanged for trying to bribe a jailer to pass some food into the jail to two Quakeresses who were starving within.

Ship tavern, erected in 1650, at the corner of North and Clark Streets, then on the waterfront, was a haunt of British government officials. The father of Governor Hutchinson was the first landlord, to be succeeded in 1663 by John Vyal. Here lived the four commissioners who were sent to these shores by King Charles II to settle the disputes then beginning between the colonies and England.

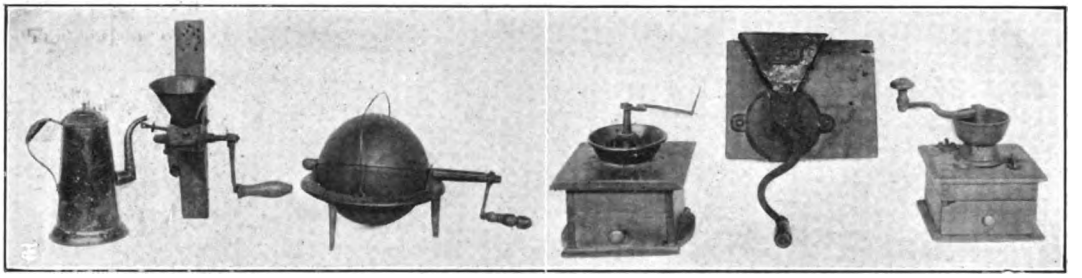
Another lodging and eating place for the gentlemen of quality in the first days of Boston was the Blue Anchor, in Cornhill, which was conducted in 1664 by Robert Turner. Here gathered members of the government, visiting officials, jurists, and the clergy, summoned into synod by the Massachusetts General Court. It is assumed that the clergy confined their drinking to coffee and other moderate beverages, leaving the wines and liquors to their confrères.

Some Notable Boston Coffee Houses

In the last quarter of the seventeenth century quite a number of taverns and inns sprang up. Among the most notable that have obtained recognition in Boston's historical records were the King's Head, at the corner of Fleet and North Streets; the Indian Queen, on a passageway leading from Washington Street to Hawley Street; the Sun, in Faneuil Hall Square, and the Green Dragon, which became one of the most celebrated coffee-house taverns.

The King's Head, opened in 1691, early became a rendezvous of crown officers and the citizens in the higher strata of colonial society.

The Indian Queen also became a favorite resort of the crown officers from Province House. Started by Nathaniel Bishop about 1673, it stood for more than 145 years as



COFFEE DEVICES THAT FIGURED IN THE PIONEERING OF THE GREAT WEST

Photographed for this work in the Museum of the State Historical Society of Wisconsin. Left to right, English decorated tin pot; coffee and spice mill from Lexington, Mass.; Globe roaster built by Rays & Wilcox Co., Berlin, Conn., under Wood's patent; sheet brass coffee mill from Lexington, Mass.; John Luther's coffee mill, Warren, R. I.; cast iron hopper mill

the Indian Queen, and then was replaced by the Washington coffee house, which became noted throughout New England as the starting place for the Roxbury "hourlies," the stage coaches that ran every hour from Boston to nearby Roxbury.

The Sun tavern lived a longer life than any other Boston inn. Started in 1690 in Faneuil Hall Square, it was still standing in 1902, according to Henry R. Blaney; but has since been razed to make way for a modern skyscraper.

New England's Most Famous Coffee House

The Green Dragon, the last of the inns that were popular at the close of the seventeenth century, was the most celebrated of Boston's coffee-house taverns. It stood on Union Street, in the heart of the town's business center, for 135 years, from 1697 to 1832, and figured in practically all the important local and national events during its long career. Red-coated British soldiers, colonial governors, bewigged crown officers, earls and dukes, citizens of high estate, plotting revolutionists of lesser degree, conspirators in the Boston Tea Party, patriots and generals of the Revolution — all these were wont to gather at the Green Dragon to discuss their various interests over their cups of coffee, and stronger drinks. In the words of Daniel Webster, this famous coffee-house tavern was the "headquarters of the Revolution." It was here that Warren, John Adams, James Otis, and Paul Revere met as a "ways and means committee" to secure freedom for the American colonies. Here, too, came members of the Grand Lodge of Masons to hold their meetings under the guidance of Warren, who was the first grand master of the first Masonic lodge in Boston. The site of the old tavern, now occupied by a business block, is still the property of the St. An-

METAL AND CHINA COFFEE POTS USED IN NEW ENGLAND'S COLONIAL DAYS

From the collection in the Museum of the Pocumtuck Valley Memorial Association, Deerfield, Mass.

THE GREEN DRAGON, THE CENTER OF SOCIAL AND POLITICAL LIFE IN BOSTON FOR 135 YEARS
This tavern figured in practically all the important national affairs from 1697 to 1832, and, according to Daniel Webster, was the "headquarters of the Revolution"

drew's Lodge of Free Masons. The old tavern was a two-storied brick structure with a sharply pitched roof. Over its entrance hung a sign bearing the figure of a green dragon.

Patrons of the Green Dragon and the British coffee house were decidedly opposed in their views on the questions of the day. While the Green Dragon was the gathering place of the patriotic colonials, the British was the rendezvous of the loyalists, and frequent were the encounters between the patrons of these two celebrated taverns. It was in the British coffee house that James Otis was so badly pummeled, after being lured there by political enemies, that he never regained his former brilliancy as an orator.

It was there, in 1750, that some British red coats staged the first theatrical entertainment given in Boston, playing Otway's *Orphan*. There, the first organization of citizens to take the name of a club formed the Merchants' Club in 1751. The membership included officers of the king, colonial governors and lesser officials, military and naval leaders, and members of the bar, with a sprinkling of high-ranking citizens who were staunch friends of the crown. However, the British became so generally disliked that as soon as the king's troops evacuated Boston in the Revolution, the name of the coffee house was changed to the American.

The Bunch of Grapes, that Francis Holmes presided over as early as 1712, was another hot-bed of politicians. Like the Green Dragon over the way, its patrons included unconditional freedom seekers, many coming from the British coffee house when things became too hot for them in that Tory atmosphere. The Bunch of Grapes became the center of a stirring celebration in 1776, when a delegate from Philadelphia read the Declaration of Independence from the balcony of the inn to the crowd assembled in the street below. So enthusiastic did the Bostonians become that, in the excitement that followed, the inn was nearly destroyed when one enthusiast built a bonfire too close to its walls. Another anecdote told of the Bunch of Grapes concerns Sir William Phipps, governor of Massachusetts from 1692-94, who was noted for his irascibility. He had his favorite chair and window in the inn, and in the accounts of the period it is written that on any fine afternoon his glowering countenance could be seen at the window by the passersby on State Street.

After the beginning of the eighteenth century the title of coffee house was applied to a number of hostelries opened in Boston. One of these was the Crown, which was opened in the "first house on Long Wharf" in 1711 by Jonathan Belcher, who later became governor of Massachusetts, and still later of New Jersey. The first landlord of the Crown was Thomas Selby, who by trade was a periwig maker, but probably found the selling of strong drink and coffee more profitable. Selby's coffee house was also used as an auction room. The Crown stood until 1780, when it was destroyed in a fire that swept the Long Wharf. On its site now stands the Fidelity Trust Company at 148 State Street.

Another early Boston coffee house on State Street was the Royal Exchange. How long it had been standing before it was first mentioned in colonial records in 1711 is unknown. It occupied an ancient two-story building, and was kept in 1711 by Benjamin Johns. This coffee house became the starting place for stage coaches running between Boston and New York, the first one leaving September 7, 1772. In the *Columbian Centinel* of January 1, 1800, appeared an advertisement in which it was said: "New York and Providence Mail Stage leaves Major Hatches' Royal Exchange Coffee House in State Street every morning at 8 o'clock."

In the latter half of the eighteenth century the North-End coffee house was celebrated as the highest-class coffee house in Boston. It occupied the three-storied brick mansion which had been built about 1740 by Edward Hutchinson, brother of the noted governor. It stood on the west side of North Street, between Sun Court and Fleet Street, and was one of the most pretentious of its kind. An eighteenth century writer, in describing this coffee-house mansion, made much of the fact that it had forty-five windows and was valued at $4,500, a large sum for those days. During the Revolution, Captain David Porter, father of Admiral David D. Porter, was the landlord, and under him it became celebrated throughout the city as a high-grade eating place. The advertisements of the North-End coffee house featured its "dinners and suppers — small and retired rooms for small company — oyster suppers in the nicest manner."

A "Skyscraper" Coffee House

The Boston coffee-house period reached its height in 1808, when the doors of the Exchange coffee house were thrown open after three years of building. This struc-

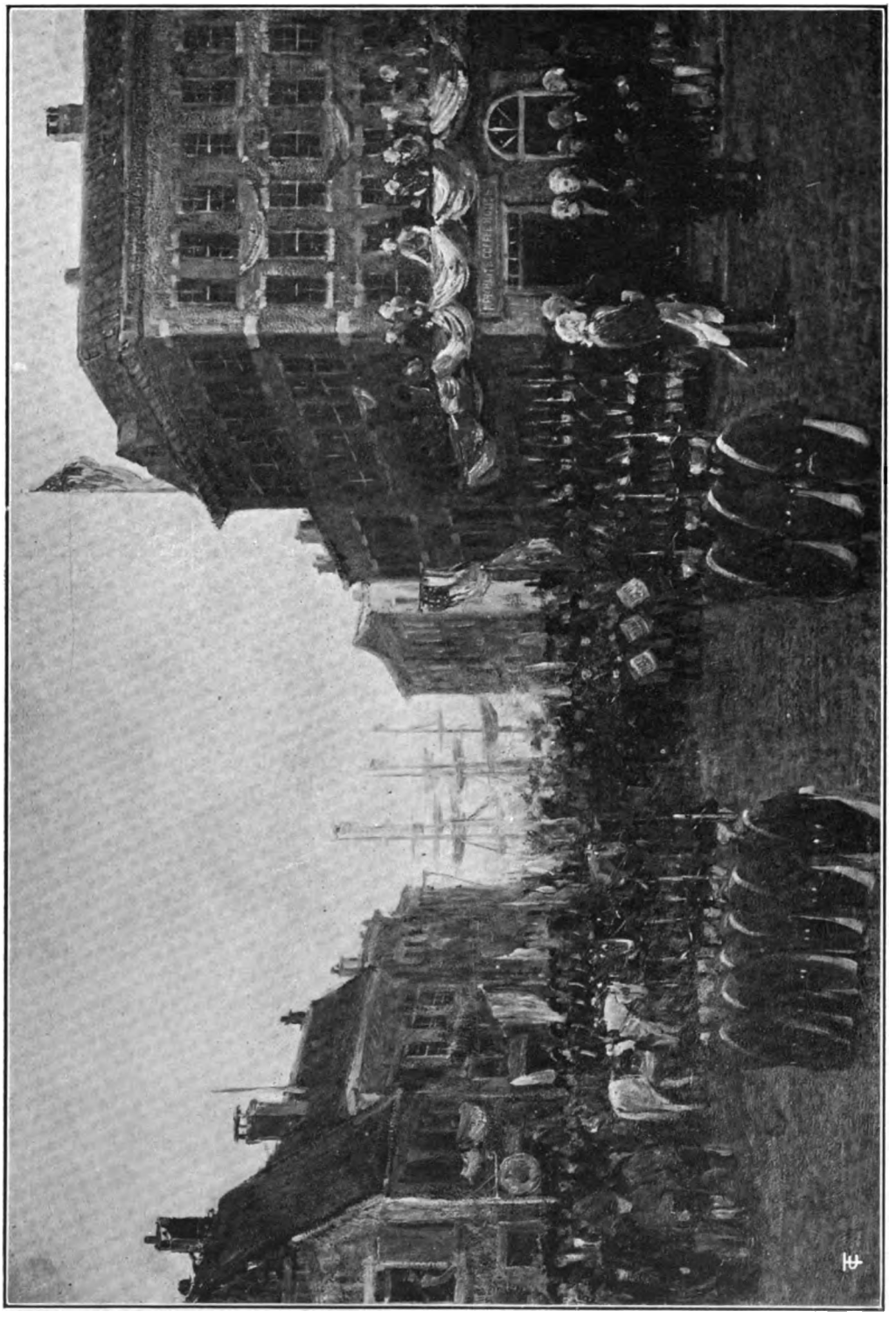
METAL COFFEE POTS USED IN THE NEW YORK COLONY

Left, tin coffee pot, dark brown, with "love apple" decoration in red, New Jersey Historical Society, Newark; right, weighted bottom tin pot with rose decoration, private owner

EXCHANGE COFFEE HOUSE, BOSTON, 1808, PROBABLY THE LARGEST AND MOST COSTLY IN THE WORLD
Built of stone, marble and brick, it stood seven stories high and cost $500,000. It was patterned after Lloyd's of London, and was the center of marine intelligence in Boston

ture, situated on Congress Street near State Street, was the skyscraper of its day, and probably was the most ambitious coffee-house project the world has known. Built of stone, marble, and brick, it stood seven stories high, and cost a half-million dollars. Charles Bulfinch, America's most noted architect of that period, was the designer.

Like Lloyd's coffee house in London, the Exchange was the center of marine intelligence, and its public rooms were thronged all day and evening with mariners, naval officers, ship and insurance brokers, who had come to talk shop or to consult the records of ship arrivals and departures, manifests, charters, and other marine papers. The first floor of the Exchange was devoted to trading. On the next floor was the large dining room, where many sumptuous banquets were given, notably the one to President Monroe in July, 1817, which was attended by former President John Adams, and by many generals, commodores, governors, and judges. The other floors were given over to living and sleeping rooms, of which there were more than 200. The Exchange coffee house was destroyed by fire in 1818; and on its site was erected another, bearing the same name, but having slight resemblance to its predecessor.



PRESIDENT-ELECT WASHINGTON WELCOMED AT THE MERCHANTS COFFEE HOUSE, NEW YORK

The reception took place April 23, 1789, one week before his inauguration. From a painting by Charles P. Gruppe, owned by the author

CHAPTER XIII

HISTORY OF COFFEE IN OLD NEW YORK

The burghers of New Amsterdam begin to substitute coffee for "must," or beer, at breakfast in 1668 — William Penn makes his first purchase of coffee in the green bean from New York merchants in 1683 — The King's Arms, the first coffee house — The historic Merchants, sometimes called the "Birth-place of our Union" — The coffee house as a civic forum — The Exchange, Whitehall, Burns, Tontine, and other celebrated coffee houses — The Vauxhall and Ranelagh pleasure gardens

THE Dutch founders of New York seem to have introduced tea into New Amsterdam before they brought in coffee. This was somewhere about the middle of the seventeenth century. We find it recorded that about 1668 the burghers succumbed to coffee[1]. Coffee made its way slowly, first in the homes, where it replaced the "must", or beer, at breakfast. Chocolate came about the same time, but was more of a luxury than tea or coffee.

After the surrender of New York to the British in 1674, English manners and customs were rapidly introduced. First tea, and later coffee, were favorite beverages in the homes. By 1683 New York had become so central a market for the green bean, that William Penn, as soon as he found himself comfortably settled in the Pennsylvania Colony, sent over to New York for his coffee supplies[2]. It was not long before a social need arose that only the London style of coffee house could fill.

The coffee houses of early New York, like their prototypes in London, Paris, and other old world capitals, were the centers of the business, political and, to some extent, of the social life of the city. But they never became the forcing-beds of literature that the French and English houses were, principally because the colonists had no professional writers of note.

There is one outstanding feature of the early American coffee houses, particularly of those opened in New York, that is not distinctive of the European houses. The colonists sometimes held court trials in the long, or assembly, room of the early coffee houses; and often held their general assembly and council meetings there.

The Coffee House as a Civic Forum

The early coffee house was an important factor in New York life. What the perpetuation of this public gathering place meant to the citizens is shown by a complaint (evidently designed to revive the declining fortunes of the historic Merchants coffee house) in the *New York Journal* of October 19, 1775, which, in part, said:

To the Inhabitants of New York:

It gives me concern, in this time of public difficulty and danger, to find we have in this city no place of daily general meeting, where we might hear and communicate intelligence from every quarter and freely confer with one another on every matter that concerns us. Such a place of general meeting is of very great advantage in many respects, especially at such a time as this, besides the satisfaction it affords and the sociable disposition it has a tendency to keep up among us, which was never more wanted than at this time. To answer all these and many other good and useful purposes, coffee houses

[1] Singleton, Esther. *Dutch New York.* 1909. (p. 133.)

[2] Bishop, J. Leander. *A History of American Manufactures, 1608 to 1860.* New York.

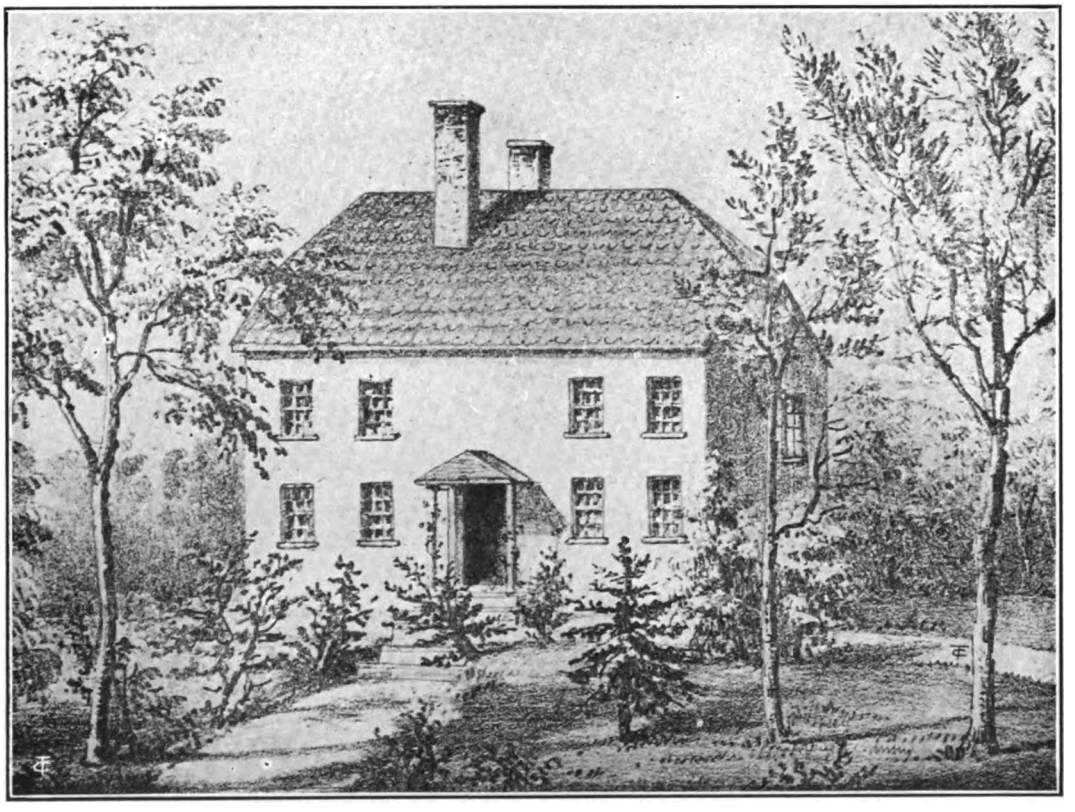
have been universally deemed the most convenient places of resort, because, at a small expense of time or money, persons wanted may be found and spoke with, appointments may be made, current news heard, and whatever it most concerns us to know. In all cities, therefore, and large towns that I have seen in the British dominions, sufficient encouragement has been given to support one or more coffee houses in a genteel manner. How comes it then that New York, the most central, and one of the largest and most prosperous cities in British America, cannot support one coffee house? It is a scandal to the city and its inhabitants to be destitute of such a convenience for want of due encouragement. A coffee house, indeed, there is, a very good and comfortable one, extremely well tended and accommodated, but it is frequented but by an inconsiderable number of people; and I have observed with surprise, that but a small part of those who do frequent it, contribute anything at all to the expense of it, but come in and go out without calling for or paying anything to the house. In all the coffee houses in London, it is customary for every one that comes in to call for at least a dish of coffee, or leave the value of one, which is but reasonable, because when the keepers of these houses have been at the expense of setting them up and providing all necessaries for the accommodation of company, every one that comes to receive the benefit of these conveniences ought to contribute something towards the expense of them.

A FRIEND TO THE CITY.

New York's First Coffee House

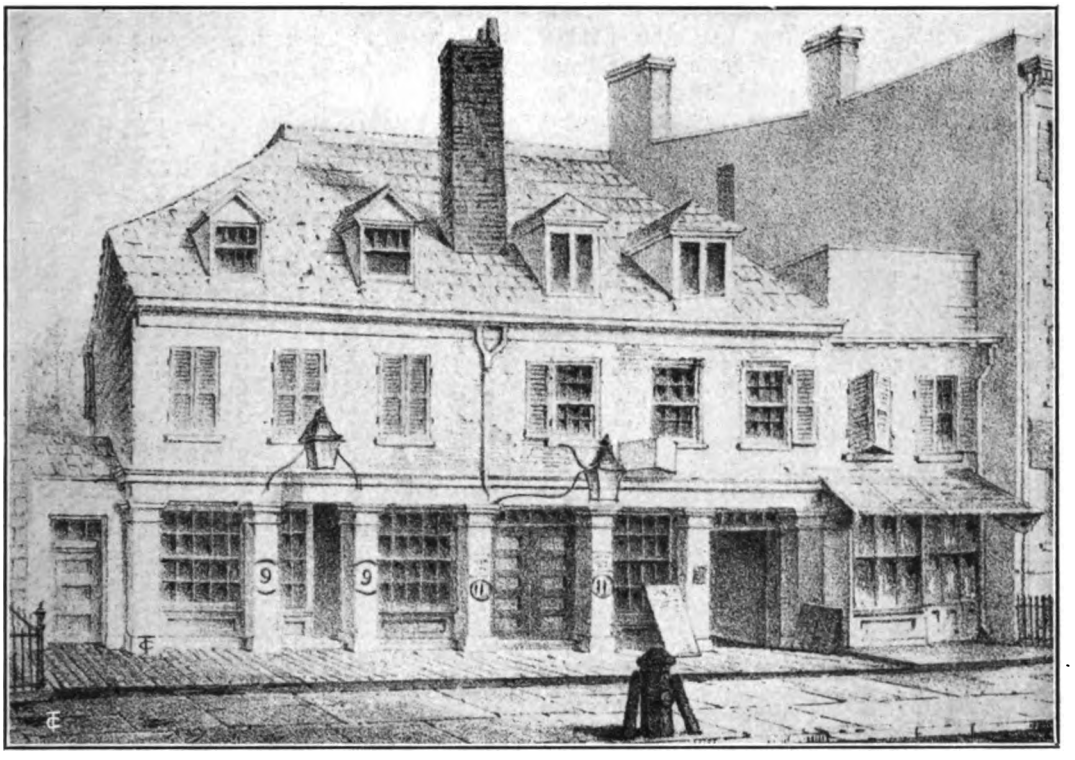
Some chroniclers of New York's early days are confident that the first coffee house in America was opened in New York; but the earliest authenticated record they have presented is that on November 1, 1696, John Hutchins bought a lot on Broadway, between Trinity churchyard and what is now Cedar Street, and there built a house, naming it the King's Arms. Against this record, Boston can present the statement in Samuel Gardner Drake's *History and Antiquities of the City of Boston* that Benj. Harris sold books at the "London Coffee House" in 1689.

The King's Arms was built of wood, and had a front of yellow brick, said to have been brought from Holland. The building was two stories high, and on the roof was an "observatory," arranged with seats, and



NEW YORK'S PIONEER COFFEE HOUSE, THE KING'S ARMS, OPENED IN 1696

This view shows the garden side of the historic old house as it was conducted by John Hutchins, near Trinity Church, on Broadway. The observatory may have been added later



BURNS COFFEE HOUSE AS IT APPEARED ABOUT THE MIDDLE OF THE NINETEENTH CENTURY
It stood for many years on Broadway, opposite Bowling Green, in the old De Lancey House, becoming known in 1763 as the King's Arms, and later the Atlantic Garden House

commanding a fine view of the bay, the river, and the city. Here the coffee-house visitors frequently sat in the afternoons. It is not shown in the illustration.

The sides of the main room on the lower floor were lined with booths, which, for the sake of greater privacy, were screened with green curtains. There a patron could sip his coffee, or a more stimulating drink, and look over his mail in the same exclusiveness affected by the Londoner of the time.

The rooms on the second floor were used for special meetings of merchants, colonial magistrates and overseers, or similar public and private business.

The meeting room, as above described, seems to have been one of the chief features distinguishing a coffee house from a tavern. Although both types of houses had rooms for guests, and served meals, the coffee house was used for business purposes by permanent customers, while the tavern was patronized more by transients. Men met at the coffee house daily to carry on business, and went to the tavern for convivial purposes or lodgings. Before the front door hung the sign of "the lion and the unicorn fighting for the crown."

For many years the King's Arms was the only coffee house in the city; or at least no other seems of sufficient importance to have been mentioned in colonial records. For this reason it was more frequently designated as "the" coffee house than the King's Arms. Contemporary records of the arrest of John Hutchins of the King's Arms, and of Roger Baker, for speaking disrespectfully of King George, mention the King's Head, of which Baker was proprietor. But it is generally believed that this public house was a tavern and not rightfully to be considered as a coffee house. The White Lion, mentioned about 1700, was also a tavern, or inn.

The New Coffee House

Under date of September 22, 1709, the *Journal of the General Assembly of the Colony of New York* refers to a conference held in the "New Coffee House." About this date the business section of the city had begun to drift eastward from Broadway to the waterfront; and from this

fact it is assumed that the name "New Coffee House" indicates that the King's Arms had been removed from its original location near Cedar Street, or that it may have lost favor and have been superseded in popularity by a newer coffee house. The *Journal* does not give the location of the "New" coffee house. Whatever the case may be, the name of the King's Arms does not again appear in the records until 1763, and then it had more the character of a tavern, or roadhouse.

The public records from 1709 up to 1729 are silent in regard to coffee houses in New York. In 1725 the pioneer newspaper in the city, the *New York Gazette*, came into existence; and four years later, 1729, there appeared in it an advertisement stating that "a competent bookkeeper may be heard of" at the "Coffee House." In 1730 another advertisement in the same journal tells of a sale of land by public vendue (auction) to be held at the Exchange coffee house.

The Exchange Coffee House

By reason of its name, the Exchange Coffee House is thought to have been located at the foot of Broad Street, abutting the sea-wall and near the Long Bridge of of that day. At that time this section was the business center of the city, and here was a trading exchange.

That the Exchange coffee house was the only one of its kind in New York in 1732 is inferred from the announcement in that year of a meeting of the conference committee of the Council and Assembly "at the Coffee House." In seeming confirmation of this conclusion, is the advertisement in 1733 in the *New York Gazette* requesting the return of "lost sleeve buttons to Mr. Todd, next door to the Coffee House." The records of the day show that a Robert Todd kept the famous Black Horse tavern which was located in this part of the city.

Again we hear of the Exchange coffee house in 1737, and apparently in the same location, where it is mentioned in an account of the "Negro plot" as being next door to the Fighting Cocks tavern by the Long Bridge, at the foot of Broad Street. Also in this same year it is named as the place of public vendue of land situated on Broadway.

By this time the Exchange coffee house had virtually become the city's official auction room, as well as the place to buy and to drink coffee. Commodities of many kinds were also bought and sold there, both within the house and on the sidewalk before it.

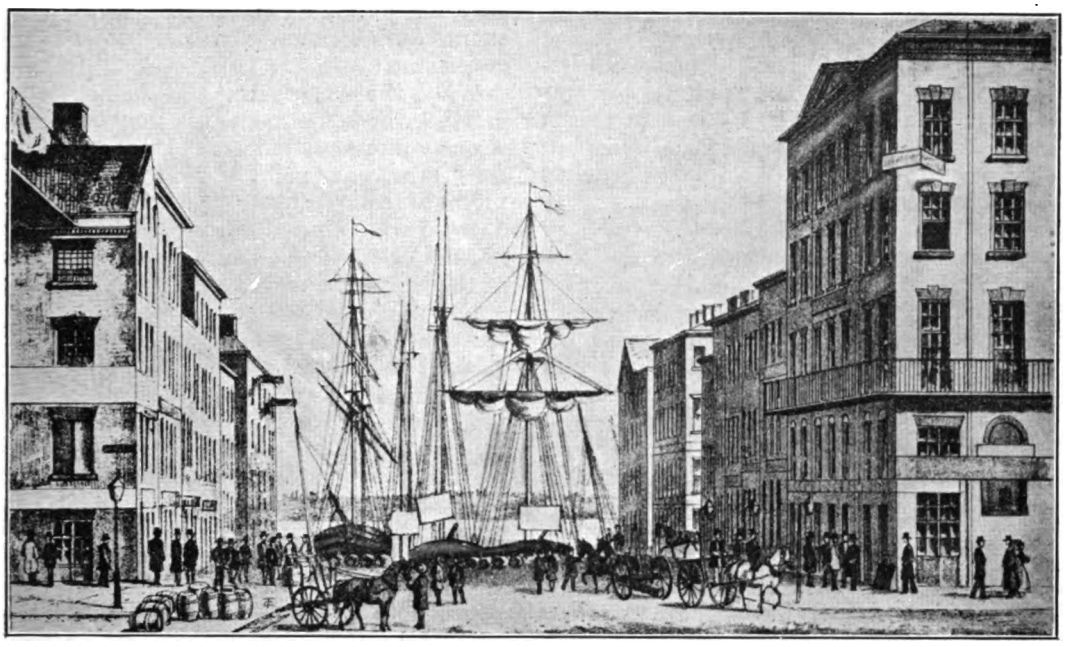
The Merchants Coffee House

In the year 1750, the Exchange coffee house had begun to lose its long-held prestige, and its name was changed to the Gentlemen's Exchange coffee house and tavern. A year later it had migrated to Broadway under the name of the Gentlemens' coffee house and tavern. In 1753 it was moved again, to Hunter's Quay, which was situated on what is now Front Street, somewhere between the present Old Slip and Wall Street. The famous old coffee house seems to have gone out of existence about this time, its passing hastened, no doubt, by the newer enterprise, the Merchants coffee house, which was to become the most celebrated in New York, and, according to some writers, the most historic in America.

It is not certain just when the Merchants coffee house was first opened. As near as can be determined, Daniel Bloom, a mariner, in 1737 bought the Jamaica Pilot Boat tavern from John Dunks and named it the Merchants coffee house. The building was situated on the northwest corner of the present Wall Street and Water (then Queen) Street; and Bloom was its landlord until his death, soon after the year 1750. He was succeeded by Captain James Ackland, who shortly sold it to Luke Roome. The latter disposed of the building in 1758 to Dr. Charles Arding. The doctor leased it to Mrs. Mary Ferrari, who continued as its proprietor until she moved, in 1772, to the newer building diagonally across the street, built by William Brownejohn, on the southeast corner of Wall and Water Streets. Mrs. Ferrari took with her the patronage and the name of the Merchants coffee house, and the old building was not used again as a coffee house.

The building housing the original Merchants coffee house was a two-story structure, with a balcony on the roof, which was typical of the middle eighteenth century architecture in New York. On the first floor were the coffee bar and booths described in connection with the King's Arms coffee house. The second floor had the typical long room for public assembly.

During Bloom's proprietorship the Merchants coffee house had a long, hard struggle



MERCHANTS COFFEE HOUSE (AT THE RIGHT) AS IT APPEARED FROM 1772 TO 1804
The original coffee house of this name was opened on the northwest corner of Wall and Water Streets about 1737, the business being moved to the southeast corner in 1772

to win the patronage away from the Exchange coffee house, which was flourishing at that time. But, being located near the Meal Market, where the merchants were wont to gather for trading purposes, it gradually became the meeting place of the city, at the expense of the Exchange coffee house, farther down the waterfront.

Widow Ferrari presided over the original Merchants coffee house for fourteen years, until she moved across the street. She was a keen business woman. Just before she was ready to open the new coffee house she announced to her old patrons that she would give a house-warming, at which arrack, punch, wine, cold ham, tongue, and other delicacies of the day would be served. The event was duly noted in the newspapers, one stating that "the agreeable situation and the elegance of the new house had occasioned a great resort of company to it."

Mrs. Ferrari continued in charge until May 1, 1776, when Cornelius Bradford became proprietor and sought to build up the patronage, that had dwindled somewhat during the stirring days immediately preceding the Revolution. In his announcement of the change of ownership, he said, "Interesting intelligence will be carefully collected and the greatest attention will be given to the arrival of vessels, when trade and navigation shall resume their former channels." He referred to the complete embargo of trade to Europe which the colonists were enduring. When the American troops withdrew from the city during the Revolution, Bradford went also, to Rhinebeck on the Hudson.

During the British occupation, the Merchants coffee house was a place of great activity. As before, it was the center of trading, and under the British régime it became also the place where the prize ships were sold. The Chamber of Commerce resumed its sessions in the upper long room in 1779, having been suspended since 1775. The Chamber paid fifty pounds rent per annum for the use of the room to Mrs. Smith, the landlady at the time.

In 1781 John Stachan, then proprietor of the Queen's Head tavern, became landlord of the Merchants coffee house, and he promised in a public announcement "to pay attention not only as a Coffee House, but as a tavern, in the truest; and to distinguish the same as the City Tavern and Coffee House, with constant and best attendance. Breakfast from seven to eleven; soups and relishes from eleven to half-past

one. Tea, coffee, etc., in the afternoon, as in England." But when he began charging sixpence for receiving and dispatching letters by man-o'-war to England, he brought a storm about his ears, and was forced to give up the practise. He continued in charge until peace came, and Cornelius Bradford came with it to resume proprietorship of the coffee house.

Bradford changed the name to the New York coffee house, but the public continued to call it by its original name, and the landlord soon gave in. He kept a marine list, giving the names of vessels arriving and departing, recording their ports of sailing. He also opened a register of returning citizens, "where any gentleman now resident in the city," his advertisement stated, "may insert their names and place of residence." This seems to have been the first attempt at a city directory. By his energy Bradford soon made the Merchants coffee house again the business center of the city. When he died, in 1786, he was mourned as one of the leading citizens. His funeral was held at the coffee house over which he had presided so well.

The Merchants coffee house continued to be the principal public gathering place until it was destroyed by fire in 1804. During its existence it had figured prominently in many of the local and national historic events, too numerous to record here in detail.

Some of the famous events were: The reading of the order to the citizens, in 1765, warning them to stop rioting against the Stamp Act; the debates on the subject of not accepting consignments of goods from Great Britain; the demonstration by the Sons of Liberty, sometimes called the "Liberty Boys," made before Captain Lockyer of the tea ship Nancy which had been turned away from Boston and sought to land its cargo in New York in 1774; the general meeting of citizens on May 19, 1774, to discuss a means of communicating with the Massachusetts colony to obtain co-ordinated effort in resisting England's oppression, out of which came the letter suggesting a congress of deputies from the colonies and calling for a "virtuous and spirited Union;" the mass meeting of citizens in the days immediately following the battles at Concord and Lexington in Massachusetts; and the forming of the Committee of One Hundred to administer the public business, making the Merchants coffee house virtually the seat of government.

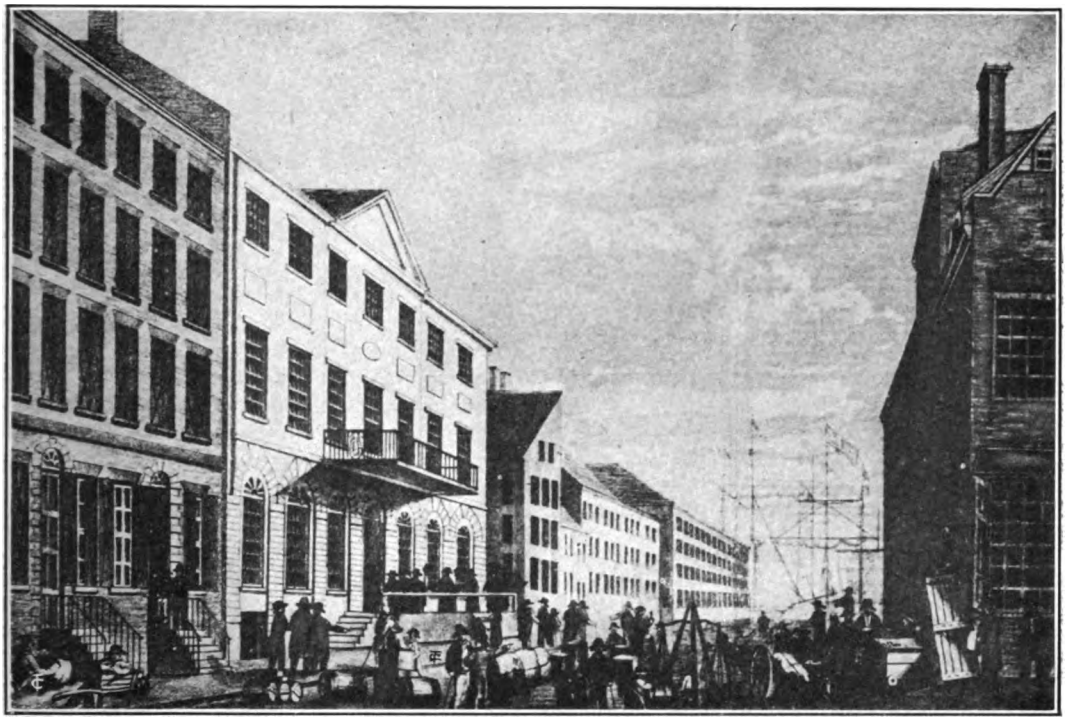
When the American Army held the city in 1776, the coffee house became the resort of army and navy officers. Its culminating glory came on April 23, 1789, when Washington, the recently elected first president of the United States, was officially greeted at the coffee house by the governor of the State, the mayor of the city, and the lesser municipal officers.

As a meeting place for societies and lodges the Merchants coffee house was long distinguished. In addition to the purely commercial organizations that gathered in its long room, these bodies regularly met there in their early days: The Society of Arts, Agriculture and Economy; Knights of Corsica; New York Committee of Correspondence; New York Marine Society; Chamber of Commerce of the State of New York; Lodge 169, Free and Accepted Masons; Whig Society; Society of the New York Hospital; St. Andrew's Society; Society of the Cincinnati; Society of the Sons of St. Patrick; Society for Promoting the Manumission of Slaves; Society for the Relief of Distressed Debtors; Black Friars Society; Independent Rangers; and Federal Republicans.

Here also came the men who, in 1784, formed the Bank of New York, the first financial institution in the city; and here was held, in 1790, the first public sale of stocks by sworn brokers. Here, too, was held the organization meeting of subscribers to the Tontine coffee house, which in a few years was to prove a worthy rival.

Some Lesser Known Coffee Houses

Before taking up the story of the famous Tontine coffee house it should be noted that the Merchants coffee house had some prior measure of competition. For four years the Exchange coffee room sought to cater to the wants of the merchants around the foot of Broad Street. It was located in the Royal Exchange, which had been erected in 1752 in place of the old Exchange, and until 1754 had been used as a store. Then William Keen and Alexander Lightfoot got control and started their coffee room, with a ball room attached. The partnership split up in 1756, Lightfoot continuing operations until he died the next year, when his widow tried to



THE TONTINE COFFEE HOUSE (SECOND BUILDING AT THE LEFT), OPENED IN 1792
This is the original structure, northwest corner of Wall and Water Streets, which was succeeded about 1850 by a five-story building (see page 122) that in turn was replaced by a modern office building

carry it on. In 1758 it had reverted into its original character of a mercantile establishment.

Then there was the Whitehall coffee house, which two men, named Rogers and Humphreys, opened in 1762, with the announcement that "a correspondence is settled in London and Bristol to remit by every opportunity all the public prints and pamphlets as soon as published; and there will be a weekly supply of New York, Boston and other American newspapers." This enterprise had a short life.

The early records of the city infrequently mention the Burns coffee house, sometimes calling it a tavern. It is likely that the place was more an inn than a coffee house. It was kept for a number of years by George Burns, near the Battery, and was located in the historic old De Lancey house, which afterward became the City hotel.

Burns remained the proprietor until 1762, when it was taken over by a Mrs. Steele, who gave it the name of the King's Arms. Edward Barden became the landlord in 1768. In later years it became known as the Atlantic Garden house. Traitor Benedict Arnold is said to have lodged in the old tavern after deserting to the enemy.

The Bank coffee house belonged to a later generation, and had few of the characteristics of the earlier coffee houses. It was opened in 1814 by William Niblo, of Niblo's Garden fame, and stood at the corner of William and Pine Streets, at the rear of the Bank of New York. The coffee house endured for probably ten years, and became the gathering place of a coterie of prominent merchants, who formed a sort of club. The Bank coffee house became celebrated for its dinners and dinner parties.

Fraunces' tavern, best known as the place where Washington bade farewell to his army officers, was, as its name states, a tavern, and can not be properly classed as a coffee house. While coffee was served, and there was a long room for gatherings, little, if any, business was done there by merchants. It was largely a meeting place for citizens bent on a "good time."

Then there was the New England and Quebec coffee house, which was also a tavern.

THE TONTINE BUILDING OF 1850
Northwest corner of Wall and Water Streets; an omnibus of the Broadway-Wall-Street Ferry line is passing

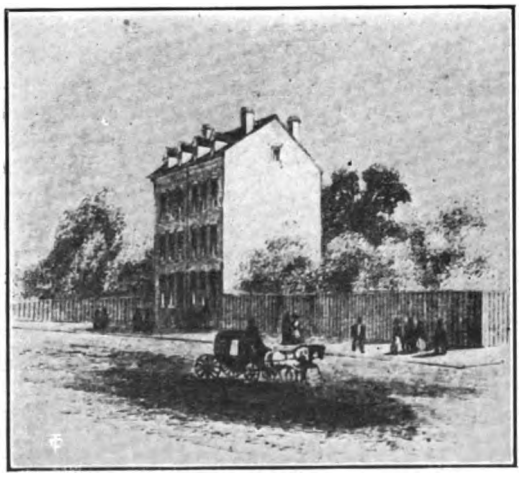
The Tontine Coffee House

The last of the celebrated coffee houses of New York bore the name, Tontine coffee house. For several years after the burning of the Merchants coffee house, in 1804, it was the only one of note in the city.

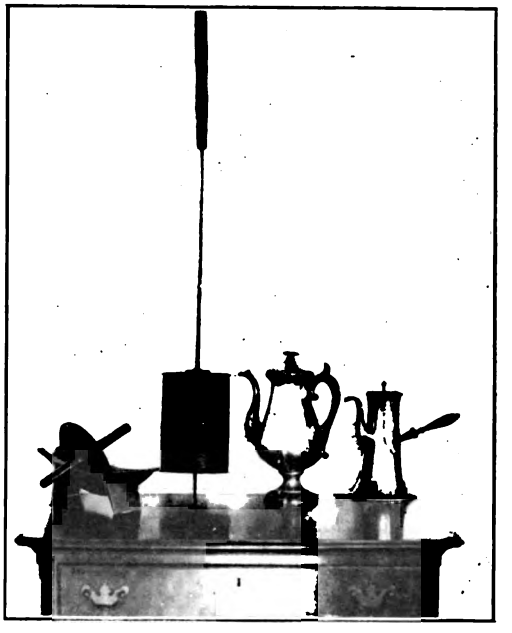
Feeling that they should have a more commodious coffee house for carrying on their various business enterprises, some 150 merchants organized, in 1791, the Tontine coffee house. This enterprise was based on the plan introduced into France in 1653 by Lorenzo Tonti, with slight variations. According to the New York Tontine plan, each holder's share reverted automatically to the surviving shareholders in the association, instead of to his heirs. There were 157 original shareholders, and 203 shares of stock valued at £200 each.

The directors bought the house and lot on the northwest corner of Wall and Water Streets, where the original Merchants coffee house stood, paying £1,970. They next acquired the adjoining lots on Wall and Water Streets, paying £2,510 for the former, and £1,000 for the latter.

The cornerstone of the new coffee house was laid June 5, 1792; and a year later to the day, 120 gentlemen sat down to a banquet in the completed coffee house to celebrate the event of the year before. John Hyde was the first landlord. The house had cost $43,000.



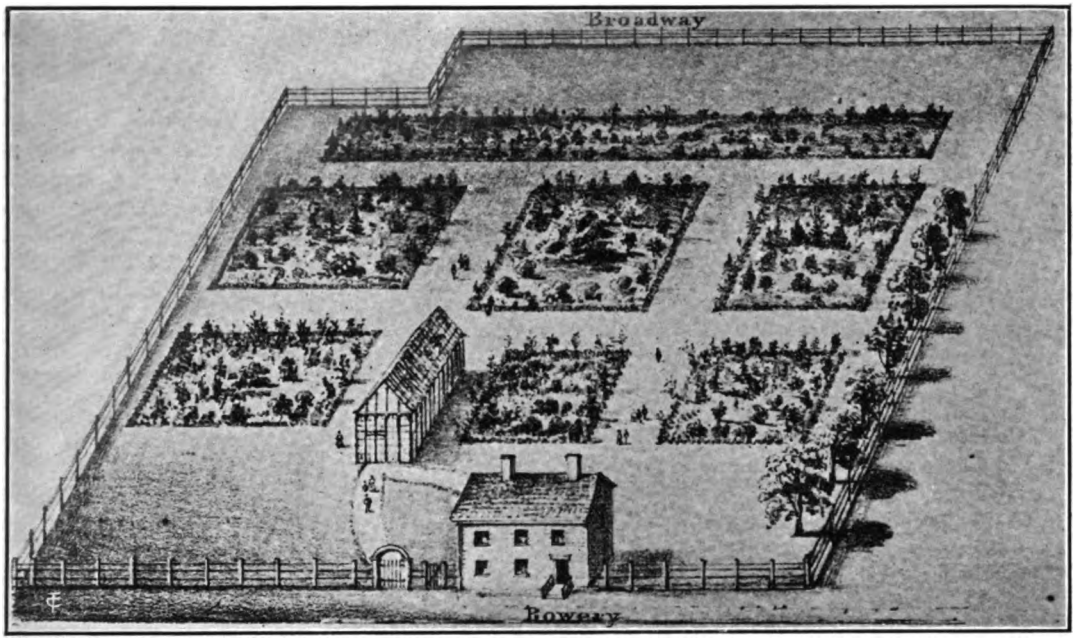
NIBLO'S GARDEN, BROADWAY AND PRINCE STREET, 1828



COFFEE RELICS OF DUTCH NEW YORK
Spice-grinder boat, coffee roaster, and coffee pots at the Van Cortlandt Museum

A contemporary account of how the Tontine coffee house looked in 1794 is supplied by an Englishman visiting New York at the time:

> The Tontine tavern and coffee house is a handsome large brick building; you ascend six or eight steps under a portico, into a large public room, which is the Stock Exchange of New York, where all bargains are made. Here are two books kept, as at Lloyd's [in London] of every ship's arrival and clearance. This house was built for the accommodation of the merchants by Tontine shares of two hundred pounds each. It is kept by Mr. Hyde, formerly a woolen



NEW YORK'S VAUXHALL GARDEN OF 1803
From an old print

draper in London. You can lodge and board there at a common table, and you pay ten shillings currency a day, whether you dine out or not.

The stock market made its headquarters in the Tontine coffee house in 1817, and the early organization was elaborated and became the New York Stock and Exchange Board. It was removed in 1827 to the Merchants Exchange Building, where it remained until that place was destroyed by fire in 1835.

It was stipulated in the original articles of the Tontine Association that the house was to be kept and used as a coffee house, and this agreement was adhered to up to the year 1834, when, by permission of the Court of Chancery, the premises were let for general business-office purposes. This change was due to the competition offered by the Merchants Exchange, a short distance up Wall Street, which had been opened soon after the completion of the Tontine coffee house building.

As the city grew, the business-office quarters of the original Tontine coffee house became inadequate; and about the year 1850 a new five-story building, costing some $60,000, succeeded it. By this time the building had lost its old coffee-house characteristics. This new Tontine structure is said to have been the first real office building in New York City. Today the site is occupied by a large modern office building, which still retains the name of Tontine. It was owned by John B. and Charles A. O'Donohue, well known New York coffee merchants, until 1920, when it was sold for $1,000,000 to the Federal Sugar Refining Company.

The Tontine coffee house did not figure so prominently in the historic events of the nation and city as did its neighbor, the Merchants coffee house. However, it became the Mecca for visitors from all parts of the country, who did not consider their sojourn in the city complete until they had at least inspected what was then one of the most pretentious buildings in New York. Chroniclers of the Tontine coffee house always say that most of the leaders of the nation, together with distinguished visitors from abroad, had foregathered in the large room of the old coffee house at some time during their careers.

It was on the walls of the Tontine coffee house that bulletins were posted on Hamilton's struggle for life after the fatal duel forced on him by Aaron Burr.

The changing of the Tontine coffee house into a purely mercantile building marked the end of the coffee-house era in New

York. Exchanges and office buildings had come into existence to take the place of the business features of the coffee houses; clubs were organized to take care of the social functions; and restaurants and hotels had sprung up to cater to the needs for beverages and food.

New York's Pleasure Gardens

There was a fairly successful attempt made to introduce the London pleasure-garden idea into New York. First, tea gardens were added to several of the taverns already provided with ball rooms. Then, on the outskirts of the city, were opened the Vauxhall and the Ranelagh gardens, so named after their famous London prototypes. The first Vauxhall garden (there were three of this name) was on Greenwich Street, between Warren and Chambers Streets. It fronted on the North River, affording a beautiful view up the Hudson. Starting as the Bowling Green garden, it changed to Vauxhall in 1750.

Ranelagh was on Broadway, between Duane and Worth Streets, on the site where later the New York Hospital was erected. From advertisements of the period (1765-69) we learn that there were band concerts twice a week at the Ranelagh. The gardens were "for breakfasting as well as the evening entertainment of ladies and gentlemen." There was a commodious hall in the garden for dancing. Ranelagh lasted twenty years. Coffee, tea, and hot rolls could be had in the pleasure gardens at any hour of the day. Fireworks were featured at both Ranelagh and Vauxhall gardens. The second Vauxhall was near the intersection of the present Mulberry and Grand Streets, in 1798; the third was on Bowery Road, near Astor Place, in 1803. The Astor library was built upon its site in 1853.

William Niblo, previously proprietor of the Bank coffee house in Pine Street, opened, in 1828, a pleasure garden, that he named Sans Souci, on the site of a circus building called the Stadium at Broadway and Prince Street. In the center of the garden remained the stadium, which was devoted to theatrical performances of "a gay and attractive character." Later, he built a more pretentious theater that fronted on Broadway. The interior of the garden was "spacious, and adorned with shrubbery and walks, lighted with festoons of lamps." It was generally known as Niblo's garden.

Among other well known pleasure gardens of old New York were Contoit's, later the New York garden, and Cherry gardens, on old Cherry Hill.

TAVERN AND GROCERS' SIGNS USED IN OLD NEW YORK

Left, Smith Richards, grocer and confectioner, "at the sign of the tea canister and two sugar loaves" (1773); center, the King's Arms, originally Burns coffee house (1767); right, George Webster, Grocer, "at the sign of the three sugar loaves"

CHAPTER XIV

COFFEE HOUSES OF OLD PHILADELPHIA

Ye Coffee House, Philadelphia's first coffee house, opened about 1700 — The two London coffee houses — The City tavern, or Merchants coffee house — How these, and other celebrated resorts, dominated the social, political, and business life of the Quaker City in the eighteenth century

WILLIAM PENN is generally credited with the introduction of coffee into the Quaker colony which he founded on the Delaware in 1682. He also brought to the "city of brotherly love" that other great drink of human brotherhood, tea. At first (1700), "like tea, coffee was only a drink for the well-to-do, except in sips."[1] As was the case in the other English colonies, coffee languished for a time while tea rose in favor, more especially in the home.

Following the stamp act of 1765, and the tea tax of 1767, the Pennsylvania Colony joined hands with the others in a general tea boycott; and coffee received the same impetus as elsewhere in the colonies that became the thirteen original states.

The coffee houses of early Philadelphia loom large in the history of the city and the republic. Picturesque in themselves, with their distinctive colonial architecture, their associations also were romantic. Many a civic, sociological, and industrial reform came into existence in the low-ceilinged, sanded-floor main rooms of the city's early coffee houses.

For many years, Ye coffee house, the two London coffee houses, and the City tavern (also known as the Merchants coffee house) each in its turn dominated the official and social life of Philadelphia. The earlier houses were the regular meeting places of Quaker municipal officers, ship captains, and merchants who came to transact public and private business. As the outbreak of the Revolution drew near, fiery colonials, many in Quaker garb, congregated there to argue against British oppression of the colonies. After the Revolution, the leading citizens resorted to the coffee house to dine and sup and to hold their social functions.

When the city was founded in 1682, coffee cost too much to admit of its being retailed to the general public at coffee houses. William Penn wrote in his *Accounts* that in 1683 coffee in the berry was sometimes procured in New York at a cost of eighteen shillings nine pence the pound, equal to about $4.68. He told also that meals were served in the ordinaries at six pence (equal to twelve cents), to wit: "We have seven ordinaries for the entertainment of strangers and for workmen that are not housekeepers, and a good meal is to be had there for six pence sterling." With green coffee costing $4.68 a pound, making the price of a cup about seventeen cents, it is not likely that coffee was on the menus of the ordinaries serving meals at twelve cents each. Ale was the common meal-time beverage.

There were four classes of public houses — inns, taverns, ordinaries, and coffee houses. The inn was a modest hotel that supplied lodgings, food, and drink, the beverages consisting mostly of ale, port, Jamaica rum, and Madeira wine. The tavern,

[1] Oberholtzer, Ellis Paxson. *Philadelphia; a history of the city and its people.* Philadelphia, 1912. (vol. 1 : p. 106.)

though accommodating guests with bed and board, was more of a drinking place than a lodging house. The ordinary combined the characteristics of a restaurant and a boarding house. The coffee house was a pretentious tavern, dispensing, in most cases, intoxicating drinks as well as coffee.

Philadelphia's First Coffee House

The first house of public resort opened in Philadelphia bore the name of the Blue Anchor tavern, and was probably established in 1683 or 1684; colonial records do not state definitely. As its name indicates, this was a tavern. The first coffee house came into existence about the year 1700. Watson, in one place in his *Annals* of the city, says 1700, but in another 1702. The earlier date is thought to be correct, and is seemingly substantiated by the co-authors Scharf and Westcott in their *History* of the city, in which they say, "The first public house designated as a coffee house was built in Penn's time [1682-1701] by Samuel Carpenter, on the east side of Front Street, probably above Walnut Street. That it was the first of its kind — the only one in fact for some years — seems to be established beyond doubt. It was always referred to in old times as 'Ye Coffee House.'"

Carpenter owned also the Globe inn, which was separated from Ye coffee house by a public stairway running down from Front Street to Water Street, and, it is supposed, to Carpenter's Wharf. The exact location of the old house was recently established from the title to the original patentee, Samuel Carpenter, by a Philadelphia real-estate title-guarantee company, as being between Walnut and Chestnut Streets, and occupying six and a half feet of what is now No. 137 South Front Street and the whole of No. 139.

How long Ye coffee house endured is uncertain. It was last mentioned in colonial records in a real estate conveyance from Carpenter to Samuel Finney, dated April 26, 1703. In that document it is described as "That brick Messuage, or Tenement, called Ye Coffee House, in the possession of Henry Flower, and situate, lying and being upon or before the bank of the Delaware River, containing in length about thirty feet and in breadth about twenty-four."

The Henry Flower mentioned as the proprietor of Philadelphia's first coffee house, was postmaster of the province for a number of years, and it is believed that Ye coffee house also did duty as the post-office for a time. Benjamin Franklin's *Pennsylvania Gazette*, in an issue published in 1734, has this advertisement:

All persons who are indebted to Henry Flower, late postmaster of Pennsylvania, for Postage of Letters or otherwise, are desir'd to pay the same to him at the old Coffee House in Philadelphia.

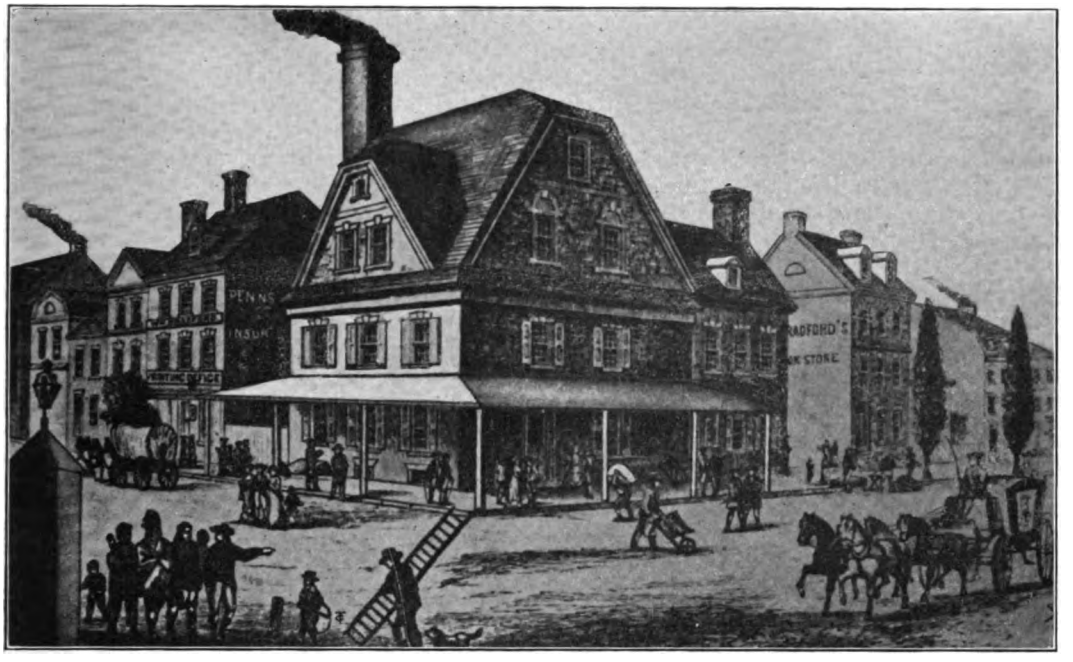
Flower's advertisement would indicate that Ye coffee house, then venerable enough to be designated as old, was still in existence, and that Flower was to be found there. Franklin also seems to have been in the coffee business, for in several issues of the *Gazette* around the year 1740 he advertised: "Very good coffee sold by the Printer."

The First London Coffee House

Philadelphia's second coffee house bore the name of the London coffee house, which title was later used for the resort William Bradford opened in 1754. The first house of this name was built in 1702, but there seems to be some doubt about its location. Writing in the *American Historical Register*, Charles H. Browning says: "William Rodney came to Philadelphia with Penn in 1682, and resided in Kent County, where he died in 1708; he built the old London coffee house at Front and Market Streets in 1702." Another chronicler gives its location as "above Walnut Street, either on the east side of Water Street, or on Delaware Avenue, or, as the streets are very close together, it may have been on both. John Shewbert, its proprietor, was a parishioner of Christ Church, and his establishment was largely patronized by Church of England people." It was also the gathering place of the followers of Penn and the Proprietary party, while their opponents, the political cohorts of Colonel Quarry, frequented Ye coffee house.

The first London coffee house resembled a fashionable club house in its later years, suitable for the "genteel" entertainments of the well-to-do Philadelphians. Ye coffee house was more of a commercial or public exchange. Evidence of the gentility of the London is given by John William Wallace:

The appointments of the London Coffee House, if we may infer what they were from the will of Mrs. Shubert [Shewbert] dated November 27, 1751, were genteel. By that instrument she



THE SECOND LONDON COFFEE HOUSE, OPENED IN 1754 BY WILLIAM BRADFORD, THE PRINTER
Up to the outbreak of the American Revolution, it was more frequented than any other tavern in the Quaker city as a place of resort and entertainment, and was famous throughout the colonies

makes bequest of two silver quart tankards; a silver cup; a silver porringer; a silver pepper pot; two sets of silver castors; a silver soup spoon; a silver sauce spoon, and numerous silver tablespoons and tea spoons, with a silver teapot.

One of the many historic incidents connected with this old house was the visit there by William Penn's eldest son, John, in 1733, when he entertained the General Assembly of the province on one day and on the next feasted the City Corporation.

Roberts' Coffee House

Another house with some fame in the middle of the eighteenth century was Roberts' coffee house, which stood in Front Street near the first London house. Though its opening date is unknown, it is believed to have come into existence about 1740. In 1744 a British army officer recruiting troops for service in Jamaica advertised in the newspaper of the day that he could be seen at the Widow Roberts' coffee house. During the French and Indian War, when Philadelphia was in grave danger of attack by French and Spanish privateers, the citizens felt so great relief when the British ship Otter came to the rescue, that they proposed a public banquet in honor of the Otter's captain to be held at Roberts' coffee house. For some unrecorded reason the entertainment was not given; probably because the house was too small to accommodate all the citizens desiring to attend. Widow Roberts retired in 1754.

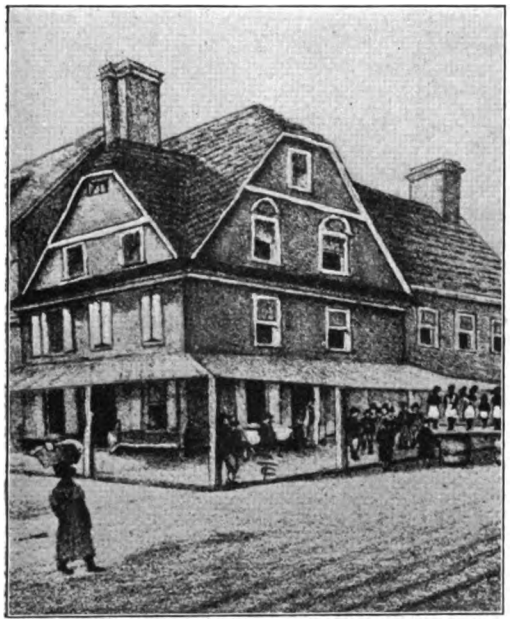
The James Coffee House

Contemporary with Roberts' coffee house was the resort run first by Widow James, and later by her son, James James. It was established in 1744, and occupied a large wooden building on the northwest corner of Front and Walnut Streets. It was patronized by Governor Thomas and many of his political followers, and its name frequently appeared in the news and advertising columns of the *Pennsylvania Gazette.*

The Second London Coffee House

Probably the most celebrated coffee house in Penn's city was the one established by William Bradford, printer of the *Pennsylvania Journal.* It was on the southwest corner of Second and Market Streets, and was named the London coffee house, the second house in Philadelphia to bear that title. The building had stood since 1702, when Charles Reed, later mayor of the city, put it up on land which he bought

from Letitia Penn, daughter of William Penn, the founder. Bradford was the first to use the structure for coffee-house purposes, and he tells his reason for entering upon the business in his petition to the governor for a license: "Having been advised to keep a Coffee House for the benefit of merchants and traders, and as some people may at times be desirous to be furnished with other liquors besides coffee, your petitioner apprehends it is necessary to have the Governor's license." This would indicate that in that day coffee was drunk as a refreshment between meals, as were spirituous liquors for so many years before, and thereafter up to 1920.



SELLING SLAVES AT THE OLD LONDON COFFEE HOUSE

Bradford's London coffee house seems to have been a joint-stock enterprise, for in his *Journal* of April 11, 1754, appeared this notice: "Subscribers to a public coffee house are invited to meet at the Courthouse on Friday, the 19th instant, at 3 o'clock, to choose trustees agreeably to the plan of subscription."

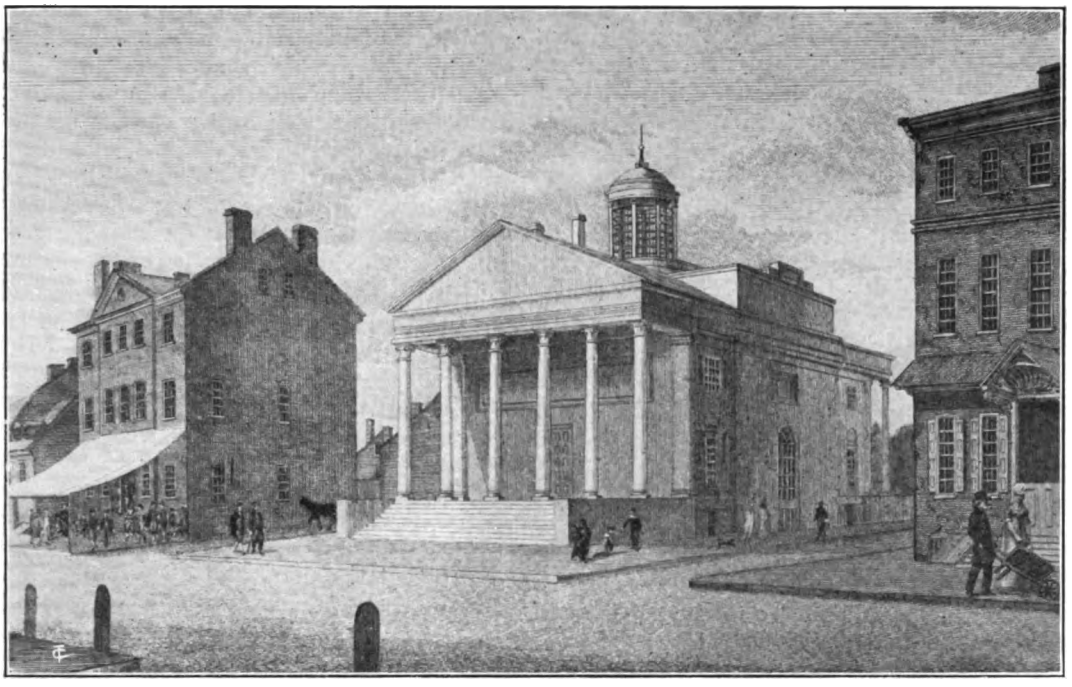
The building was a three-story wooden structure, with an attic that some historians count as the fourth story. There was a wooden awning one-story high extending out to cover the sidewalk before the coffee house. The entrance was on Market (then known as High) Street.

The London coffee house was "the pulsating heart of excitement, enterprise, and patriotism" of the early city. The most active citizens congregated there — merchants, shipmasters, travelers from other colonies and countries, crown and provincial officers. The governor and persons of equal note went there at certain hours "to sip their coffee from the hissing urn, and some of those stately visitors had their own stalls." It had also the character of a mercantile exchange — carriages, horses, foodstuffs, and the like being sold there at auction. It is further related that the early slave-holding Philadelphians sold negro men, women, and children at vendue, exhibiting the slaves on a platform set up in the street before the coffee house.

The resort was the barometer of public sentiment. It was in the street before this house that a newspaper published in Barbados, bearing a stamp in accordance with the provisions of the stamp act, was publicly burned in 1765, amid the cheers of bystanders. It was here that Captain Wise of the brig Minerva, from Pool, England, who brought news of the repeal of the act, was enthusiastically greeted by the crowd in May, 1766. Here, too, for several years the fishermen set up May poles.

Bradford gave up the coffee house when he joined the newly formed Revolutionary army as major, later becoming a colonel. When the British entered the city in September, 1777, the officers resorted to the London coffee house, which was much frequented by Tory sympathizers. After the British had evacuated the city, Colonel Bradford resumed proprietorship; but he found a change in the public's attitude toward the old resort, and thereafter its fortunes began to decline, probably hastened by the keen competition offered by the City tavern, which had been opened a few years before.

Bradford gave up the lease in 1780, transferring the property to John Pemberton, who leased it to Gifford Dally. Pemberton was a Friend, and his scruples about gambling and other sins are well exhibited in the terms of the lease in which said Dally "covenants and agrees and promises that he will exert his endeavors as a Christian to preserve decency and order in said house, and to discourage the profanation of the sacred name of God Almighty by cursing, swearing, etc., and that the house



THE CITY TAVERN, BUILT IN 1773, AND KNOWN AS THE MERCHANTS COFFEE HOUSE
The tavern (at the left) was regarded as the largest inn of the colonies and stood next to the Bank of Pennsylvania (center). From a print made from a rare Birch engraving

on the first day of the week shall always be kept closed from public use." It is further covenanted that "under a penalty of £100 he will not allow or suffer any person to use, or play at, or divert themselves with cards, dice, back-gammon, or any other unlawful game."

It would seem from the terms of the lease that what Pemberton thought were ungodly things, were countenanced in other coffee houses of the day. Perhaps the regulations were too strict; for a few years later the house had passed into the hands of John Stokes, who used it as dwelling and a store.

City Tavern or Merchants Coffee House

The last of the celebrated coffee houses in Philadelphia was built in 1773 under the name of the City tavern, which later became known as the Merchants coffee house, possibly after the house of the same name that was then famous in New York. It stood in Second Street near Walnut Street, and in some respects was even more noted than Bradford's London coffee house, with which it had to compete in its early days.

The City tavern was patterned after the best London coffee houses; and when opened, it was looked upon as the finest and largest of its kind in America. It was three stories high, built of brick, and had several large club rooms, two of which were connected by a wide doorway that, when open, made a large dining room fifty feet long.

Daniel Smith was the first proprietor, and he opened it to the public early in 1774. Before the Revolution, Smith had a hard struggle trying to win patronage from Bradford's London coffee house, standing only a few blocks away. But during and after the war, the City tavern gradually took the lead, and for more than a quarter of a century was the principal gathering place of the city. At first, the house had various names in the public mind, some calling it by its proper title, the City tavern, other attaching the name of the proprietor and designating it as Smith's tavern, while still others used the title, the New tavern.

The gentlefolk of the city resorted to the City tavern after the Revolution as they had to Bradford's coffee house before. However, before reaching this high estate, it once was near destruction at the hands of the Tories, who threatened to tear it

down. That was when it was proposed to hold a banquet there in honor of Mrs. George Washington, who had stopped in the city in 1776 while on the way to meet her distinguished husband, then at Cambridge in Massachusetts, taking over command of the American army. Trouble was averted by Mrs. Washington tactfully declining to appear at the tavern.

After peace came, the house was the scene of many of the fashionable entertainments of the period. Here met the City Dancing Assembly, and here was held the brilliant fête given by M. Gerard, first accredited representative from France to the United States, in honor of Louis XVI's birthday. Washington, Jefferson, Hamilton, and other leaders of public thought were more or less frequent visitors when in Philadelphia.

The exact date when the City tavern became the Merchants coffee house is unknown. When James Kitchen became proprietor, at the beginning of the nineteenth century, it was so called. In 1806 Kitchen turned the house into a bourse, or mercantile exchange. By that time clubs and hotels had come into fashion, and the coffee-house idea was losing caste with the élite of the city.

In the year 1806 William Renshaw planned to open the Exchange coffee house in the Bingham mansion on Third Street. He even solicited subscriptions to the enterprise, saying that he proposed to keep a marine diary and a registry of vessels for sale, to receive and to forward ships' letter bags, and to have accommodations for holding auctions. But he was persuaded from the idea, partly by the fact that the Merchants coffee house seemed to be satisfactorily filling that particular niche in the city life, and partly because the hotel business offered better inducements. He abandoned the plan, and opened the Mansion House hotel in the Bingham residence in 1807.

EXCHANGE COFFEE HOUSE SCENE IN "HAMILTON"

In this setting for the first act of the play by Mary P. Hamlin and George Arliss, produced in 1918, the scenic artist aimed to give a true historical background, and combined the features of several inns and coffee houses in Philadelphia, Virginia, and New England as they existed in Washington's first administration

Chapter XV

THE BOTANY OF THE COFFEE PLANT

Its complete classification by class, sub-class, order, family, genus, and species — How the Coffea arabica grows, flowers, and bears — Other species and hybrids described — Natural caffein-free coffee — Fungoid diseases of coffee

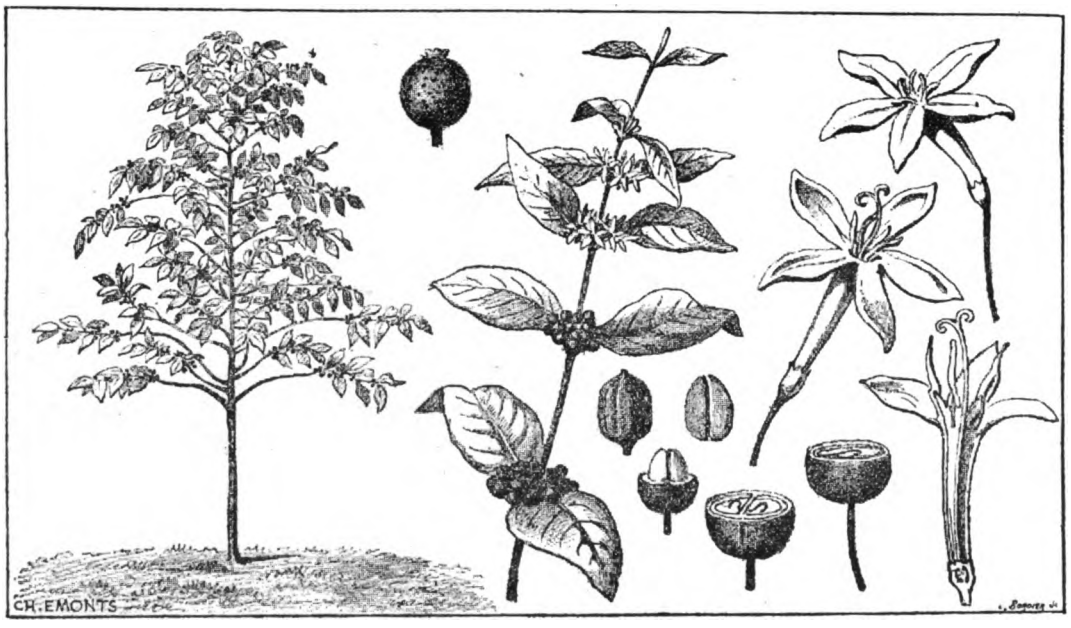
THE coffee tree, scientifically known as *Coffea arabica,* is native to Abyssinia and Ethiopia, but grows well in Java, Sumatra, and other islands of the Dutch East Indies; in India, Arabia, equatorial Africa, the islands of the Pacific, in Mexico, Central and South America, and the West Indies. The plant belongs to the large sub-kingdom of plants known scientifically as the Angiosperms, or *Angiospermæ,* which means that the plant reproduces by seeds which are enclosed in a box-like compartment, known as the ovary, at the base of the flower. The word Angiosperm is derived from two Greek words, *sperma,* a seed, and *aggeion,* pronounced angeion, a box, the box referred to being the ovary.

This large sub-kingdom is subdivided into two classes. The basis for this division is the number of leaves in the little plant which develops from the seed. The coffee plant, as it develops from the seed, has two little leaves, and therefore belongs to the class *Dicotyledoneæ.* This word *dicotyledoneæ* is made up of the two Greek words, *di(s),* two, and *kotyledon,* cavity or socket. It is not necessary to see the young plant that develops from the seed in order to know that it had two seed leaves; because the mature plant always shows certain characteristics that accompany this condition of the seed.

In every plant having two seed leaves, the mature leaves are netted-veined, which is a condition easily recognized even by the layman; also the parts of the flowers are in circles containing two or five parts, but never in threes or sixes. The stems of plants of this class always increase in thickness by means of a layer of cells known as a cambium, which is a tissue that continues to divide throughout its whole existence. The fact that this cambium divides as long as it lives, gives rise to a peculiar appearance in woody stems by which we can, on looking at the stem of a tree of this type when it has been sawed across, tell the age of the tree.

In the spring the cambium produces large open cells through which large quantities of sap can run; in the fall it produces very thick-walled cells, as there is not so much sap to be carried. Because these thin-walled open cells of one spring are next to the thick-walled cells of the last autumn, it is very easy to distinguish one year's growth from the next; the marks so produced are called annual rings.

We have now classified coffee as far as the class; and so far we could go if we had only the leaves and stem of the coffee plant. In order to proceed farther, we must have the flowers of the plant, as botanical classification goes from this point on the basis of the flowers. The class *Dicotyledoneæ* is separated into sub-classes according to whether the flower's corolla (the showy part of the flower which ordinarily gives it its color) is all in one piece, or is divided into a number of parts. The coffee flower is arranged with its corolla all in one piece, forming a tube-shaped arrangement, and accordingly the coffee plant



THE COFFEE TREE, SHOWING DETAILS OF FLOWERS AND FRUIT
From a drawing by Ch. Emonts in Jardin's *Le Caféier et Le Café*

belongs to the sub-class *Sympetalæ*, or *Metachlamydeæ*, which means that its petals are united.

The next step in classification is to place the plant in the proper division under the sub-class, which is the order. Plants are separated into orders according to their varied characteristics. The coffee plant belongs to an order known as *Rubiales*. These orders are again divided into families. Coffee is placed in the family *Rubiaceæ*, or Madder Family, in which we find herbs, shrubs or trees, represented by a few American plants, such as bluets, or Quaker ladies, small blue spring flowers, common to open meadows in northern United States; and partridge berries (*Mitchella repens*).

The Madder Family has more foreign representatives than native genera, among which are *Coffea*, *Cinchona*, and *Ipecacuanha* (*Uragoga*), all of which are of economic importance. The members of this family are noted for their action on the nervous system. Coffee, as is well known, contains an active principle known as caffein which acts as a stimulant to the nervous system and in small quantities is very beneficial. *Cinchona* supplies us with quinine, while *Ipecacuanha* produces ipecac, which is an emetic and purgative.

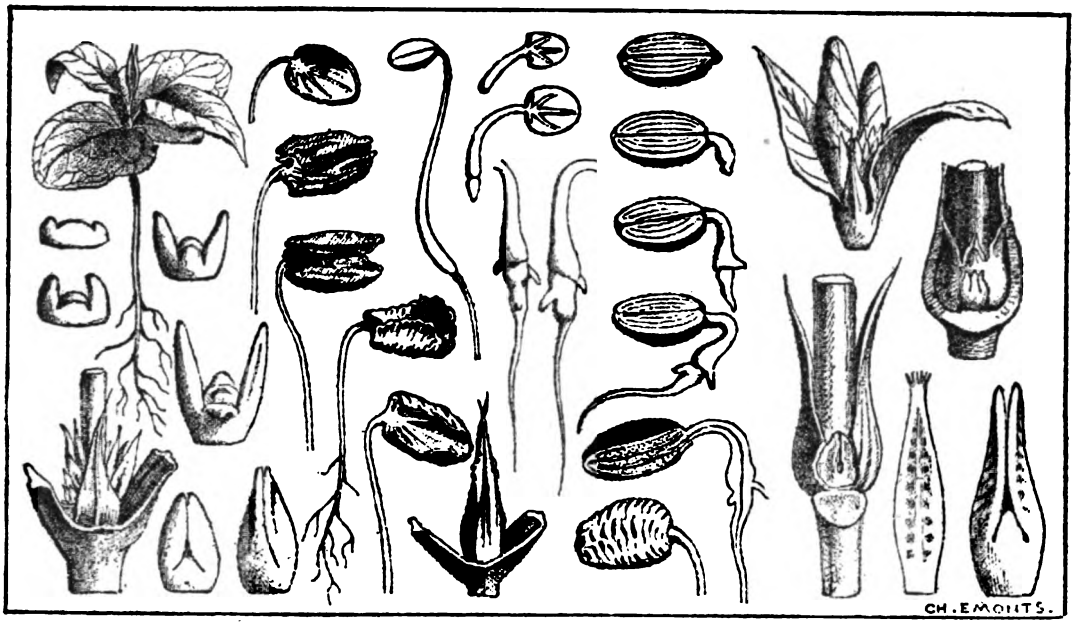
The families are divided into smaller sections known as genera, and to the genus *Coffea* belongs the coffee plant. Under this genus *Coffea* are several sub-genera, and to the sub-genus *Eucoffea* belongs our common coffee, *Coffea arabica*. *Coffea arabica* is the original or common Java coffee of commerce. The term "common" coffee may seem unnecessary, but there are many other species of coffee besides *arabica*. These species have not been described very frequently; because their native haunts are the tropics, and the tropics do not always offer favorable conditions for the study of their plants.

All botanists do not agree in their classification of the species and varieties of the *coffea* genus. M. E. de Wildman, curator of the royal botanical gardens at Brussels, in his *Les Plantes Tropicales de Grande Culture*, says the systematic division of this interesting genus is far from finished; in fact, it may be said hardly to be begun.

Coffea arabica we know best because of the important role it plays in commerce.

COMPLETE CLASSIFICATION OF COFFEE

Kingdom	*Vegetable*
Sub-Kingdom	*Angiospermæ*
Class	*Dicotyledoneæ*
Sub-class	*Sympetalæ or Metachlamydeæ*
Order	*Rubiales*
Family	*Rubiaceæ*
Genus	*Coffea*
Sub-genus	*Eucoffea*
Species	*C. arabica*



DETAILS OF THE GERMINATION OF THE COFFEE PLANT
From a drawing by Ch. Emonts in Jardin's *Le Caféier et Le Café*

The coffee plant most cultivated for its berries is, as already stated, *Coffea arabica,* which is found in tropical regions, although it can grow in temperate climates. Unlike most plants that grow best in the tropics, it can stand low temperatures. It requires shade when it grows in hot, low-lying districts; but when it grows on elevated land, it thrives without such protection. Freeman[1] says there are about eight recognized species of *coffea.*

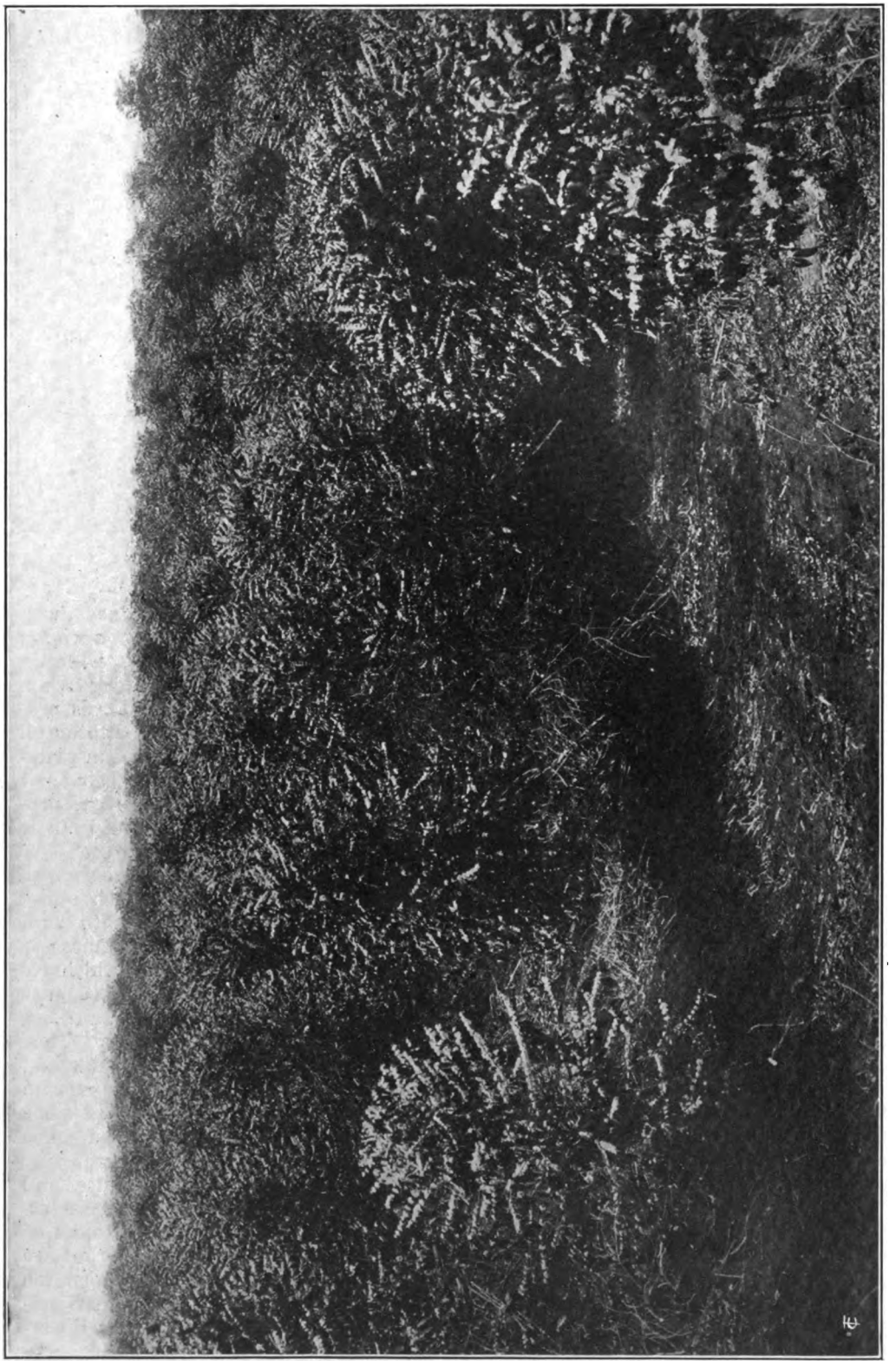
Coffea Arabica

Coffea arabica is a shrub with evergreen leaves, and reaches a height of fourteen to twenty feet when fully grown. The shrub produces dimorphic branches, *i. e.,* branches of two forms, known as uprights and laterals. When young, the plants have a main stem, the upright, which, however, eventually sends out side shoots, the laterals. The laterals may send out other laterals, known as secondary laterals; but no lateral can ever produce an upright. The laterals are produced in pairs and are opposite, the pairs being borne in whorls around the stem. The laterals are produced only while the joint of the upright, to which they are attached, is young; and if they are broken off at that point, the upright has no power to reproduce them. The upright can produce new uprights also; but if an upright is cut off, the laterals at that position tend to thicken up. This is very desirable, as the laterals produce the flowers, which seldom appear on the uprights. This fact is utilized in pruning the coffee tree, the uprights being cut back, the laterals then becoming more productive. Planters generally keep their trees pruned down to about six feet.

The leaves are lanceolate, or lance-shaped, being borne in pairs opposite each other. They are three to six inches in length, with an acuminate apex, somewhat attenuate at the base, with very short petioles which are united with the short interpetiolar stipules at the base. The coffee leaves are thin, but of firm texture, slightly coriaceous. They are very dark green on the upper surface, but much lighter underneath. The margin of the leaf is entire and wavy. In some tropical countries the natives brew a coffee tea from the leaves of the coffee tree.

The coffee flowers are small, white, and very fragrant, having a delicate characteristic odor. They are borne in the axils of the leaves in clusters, and several crops are produced in one season, depending on the conditions of heat and moisture that prevail in the particular season. The different blossomings are classed as main blossom-

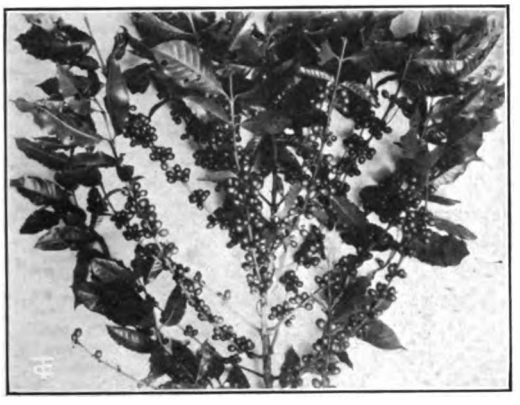
[1] Freeman, W. G. *The World's Commercial Products.* Boston. (p. 176.)



BRAZIL COFFEE PLANTATION IN FLOWER

ing and smaller blossomings. In semi-dry high districts, as in Costa Rica or Guatemala, there is one blossoming season, about March, and flowers and fruit are not found together, as a rule, on the trees. But in lowland plantations where rain is perennial, blooming and fruiting continue practically all the year; and ripe fruits, green fruits, open flowers, and flower buds are to be found at the same time on the same branchlet, not mixed together, but in the order indicated.

The flowers are also tubular, the tube of the corolla dividing into five white segments. Dr. P. J. S. Cramer, chief of the division of plant breeding, Department of Agriculture, Netherlands India, says the number of petals is not at all constant, not even for flowers of the same tree. The corolla segments are about one-half inch in length, while the tube itself is about three-eighths of an inch long. The anthers of the stamens, which are five in number, protrude from the top of the corolla tube, together with the top of the two-cleft pistil. The calyx, which is so small as to escape notice unless one is aware of its existence, is annular, with small, tooth-like indentations.



COFFEA ARABICA — PORTO RICO

While the usual color of the coffee flower is white, the fresh stamens and pistils may have a greenish tinge, and in some cultivated species the corolla is pale pink.

The size and condition of the flowers are entirely dependent on the weather. The flowers are sometimes very small, very fragrant, and very numerous; while at other times, when the weather is not hot and dry, they are very large, but not so numerous. Both sets of flowers mentioned above "set fruit," as it is called; but at times, especially in a very dry season, they bear flowers that are few in number, small, and imperfectly formed, the petals frequently being green instead of white. These flowers do not set fruit. The flowers that open on a dry sunny day show a greater yield of fruit than those that open on a wet day, as the first mentioned have a better chance of being pollinated by the insects and the wind. The beauty of a coffee estate in flower is of a very fleeting character. One day it is a snowy expanse of fragrant white blossoms for miles and miles, as far as the eye can see, and two days later it reminds one of the lines from Villon's *Des Dames du Temps Jadis*,

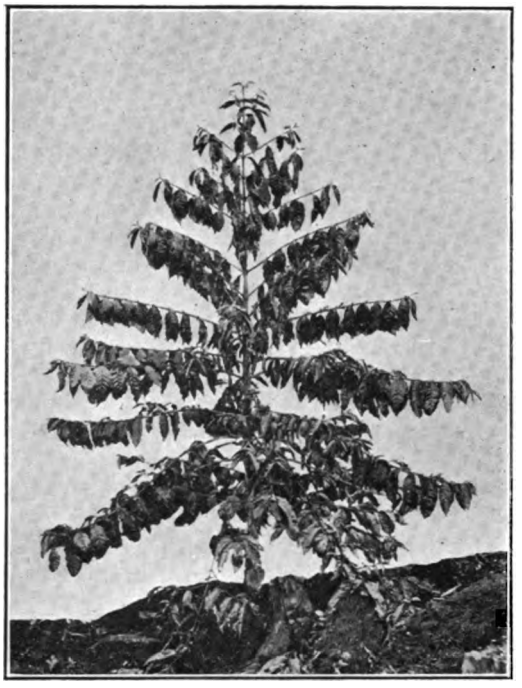
> Where are the snows of yesterday?
> The winter winds have blown them all away.

But here, the winter winds are not to blame: the soft, gentle breezes of the per-

COFFEA ARABICA, FLOWER AND FRUIT — COSTA RICA

petual summer have wrought the havoc, leaving, however, a not unpleasing picture of dark, cool, mossy green foliage.

The flowers are beautiful, but the eye of the planter sees in them not alone beauty and fragrance. He looks far beyond, and in his mind's eye he sees bags and bags

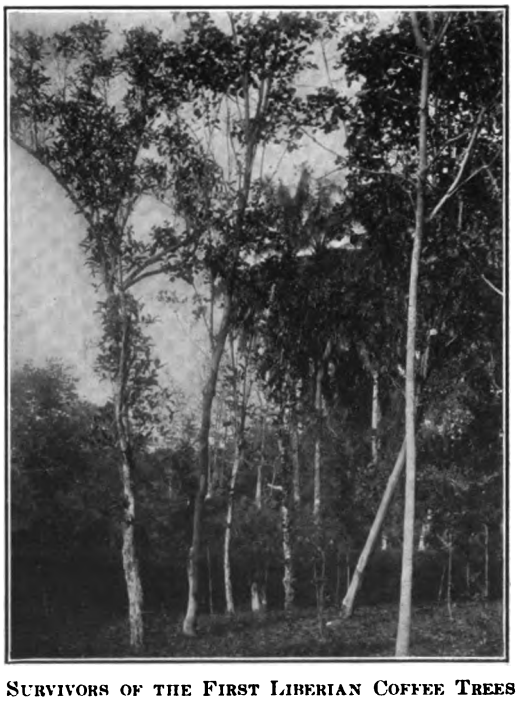


YOUNG COFFEA ARABICA TREE AT KONA, HAWAII

of green coffee, representing to him the goal and reward of all his toil. After the flowers droop, there appear what are commercially known as the coffee berries. Botanically speaking, "berry" is a misnomer. These little fruits are not berries, such as are well represented by the grape; but are drupes, which are better exemplified by the cherry and the peach. In the course of six or seven months, these coffee drupes develop into little red balls about the size of an ordinary cherry; but, instead of being round, they are somewhat ellipsoidal, having at the outer end a small umbilicus. The drupe of the coffee usually has two locules, each containing a little "stone" (the seed and its parchment covering) from which the coffee bean (seed) is obtained. Some few drupes contain three, while others, at the outer ends of the branches, contain only one round bean, known as the peaberry. The number of pickings corresponds to the different blossomings in the same season; and one tree of the species *arabica* may yield from one to twelve pounds a year.

In countries like India and Africa, the birds and monkeys eat the ripe coffee berries. The so-called "monkey coffee" of India, according to Arnold, is the undigested coffee beans passed through the alimentary canal of the animal.

The pulp surrounding the coffee beans is at present of no commercial importance. Although efforts have been made at various times by natives to use it as a food, its flavor has not gained any great popularity, and the birds are permitted a monopoly of the pulp as a food. From the human standpoint the pulp, or sarcocarp, as it is scientifically called, is rather an annoyance, as it must be removed in order to procure the beans. This is done in one of two ways. The first is known as the dry method, in which the entire fruit is allowed to dry, and is then cracked open. The second way is called the wet method; the sarcocarp is removed by machine, and two wet, slimy seed packets are obtained. These packets, which look for all the world like seeds, are allowed to dry in such a way that fermentation takes place. This rids them of all the slime; and, after they are thoroughly dry, the endocarp, the so-called parchment covering, is easily cracked open and removed. At the same time that the parchment is removed, a thin silvery membrane, the silver skin, beneath the parchment, comes off, too. There are always



SURVIVORS OF THE FIRST LIBERIAN COFFEE TREES INTRODUCED INTO JAVA IN 1876

COFFEA ARABICA IN FLOWER ON A JAVA ESTATE

From a photograph made at Dramaga, Preanger, Java, in 1907

LIBERIAN COFFEE TREE AT LAMOA, P. I.

small fragments of this silver skin to be found in the groove of the coffee bean contained within the parchment packet.

We have said that the coffee tree yields from one to twelve pounds a year, but of course this varies with the individual tree and also with the region. In some countries the whole year's yield is less than 200 pounds per acre, while there is on record a patch in Brazil which yields about seventeen pounds to the tree, bringing the yield per acre much higher.

The beans do not retain their vitality for planting for any considerable length of time; and, if they are thoroughly dried, or are kept for longer than three or four months, they are useless for that purpose. It takes the seed about six weeks to germinate and to appear above ground. Trees raised from seed begin to blossom in about three years; but a good crop can not be expected of them for the first five or six years. Their usefulness, save in exceptional cases, is ended in about thirty years.

The coffee tree can be propagated in a way other than by seeds. The upright branches can be used as slips, which, after taking root, will produce seed-bearing laterals. The laterals themselves can not be used as slips. In Central America the natives sometimes use coffee uprights for fences and it is no uncommon sight to see the fence posts "growing."

The wood of the coffee tree is used also for cabinet work, as it is much stronger than many of the native woods, weighing about forty-three pounds to the cubic foot, having a crushing strength of 5,800 pounds per square inch, and a breaking strength of 10,900 pounds per square inch.

The propagation of the coffee plant by cutting has two distinct advantages over propagation by seed, in that it spares the expense of seed production, which is enormous, and it gives also a method of hybridization, which, if used, might lead not only to very interesting but also to very profitable results.

The hybridization of the coffee plant was taken up in a thoroughly scientific manner by the Dutch government at the experimental garden established at Bangelan, Java, in 1900. In his studies, twelve varieties of *Coffea arabica* are recognized by Dr. P. J. S. Cramer[2], namely:

Laurina, a hybrid of *Coffea arabica* with *C. mauritiana*, having small narrow leaves, stiff, dense branches, young leaves almost white, berry long and narrow, and beans narrow and oblong.

Murta, having small leaves, dense branches, beans as in the typical *Coffea arabica*, and the plant able to stand bitter cold.

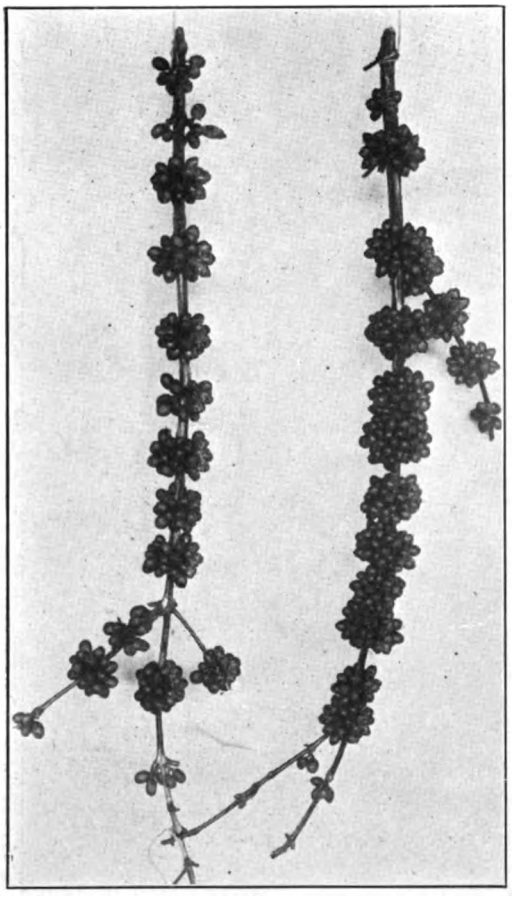
Menosperma, a distinct type, with narrow leaves and bent-down branches resembling a

[2] *Tea and Coffee Trade Jour.*, 1918. (vol. xxxv: no. 4)

TWO-AND-ONE-HALF-YEAR-OLD C. CONGENSIS

A HEAVY FLOWERING OF FIVE-YEAR-OLD COFFEA EXCELSA

This is a comparatively new species, discovered in the Tchad Lake district of West Africa in 1905. It is a small-beaned variety of *Coffea liberica*



BRANCHES OF COFFEA EXCELSA GROWN AT THE LAMAO EXPERIMENT STATION, P. I.

willow, the berries seldom containing more than one seed.

Mokka (*Coffea Mokkæ*), having small leaves, dense foliage, small round berries, small round beans resembling split peas, and possessed of a stronger flavor than *Coffea arabica*.

Purpurescens, a red-leaved variety, comparable with the red-leaved hazel and copper beech, a little less productive than the *Coffea arabica*.

Variegata, having variegated leaves striped and spotted with white.

Amarella, having yellow berries, comparable with the white-fruited variety of the strawberry, raspberry, etc.

Bullata, having broad, curled leaves; stiff, thick, fragile branches, and round, fleshy berries containing a high percentage of empty beans.

Angustifolia, a narrow-leaved variety, with berries somewhat more oblong and, like the foregoing, a poor producer.

Erecta, a variety that is sturdier than the typical *arabica*, better suited to windy places, and having a production as in the common *arabica*.

Maragogipe, a well-defined variety with light green leaves having colored edges; berries large, broad, sometimes narrower in the middle; a

C. STENOPHYLLA, FROM WHICH IS OBTAINED THE HIGHLAND COFFEE OF SIERRA LEONE

light bearer, the whole crop sometimes being reduced to a couple of berries per tree.[3]

Columnaris, a vigorous variety, sometimes reaching a height of 25 feet, having leaves rounded at the base and rather broad, but a shy bearer, recommended for dry climates.

Coffea Stenophylla

Coffea arabica has a formidable rival in the species *stenophylla*. The flavor of this variety is pronounced by some as surpassing that of *arabica*. The great disadvantage of this plant is the fact that it requires so long a time before a yield of any value can be secured. Although the time required for the maturing of the crop is so long, when once the plantation begins to yield, the crop is as large as that of *Coffea arabica*, and occasionally somewhat larger. The leaves are smaller than any of the species described, and the flowers bear their parts in numbers varying from six to nine. The tree is a native of Sierra Leone, where it grows wild.

Coffea Liberica

The beam of *Coffea arabica*, although the principal bean used in commerce, is not the

[3] Dr. Cramer considers *C. Maragogipe* "the finest coffee known; it has a highly developed, splendid flavor."

Copyright, 1909, by The Tea and Coffee Trade Journal

NEAR VIEW OF COFFEE BERRIES OF COFFEA ARABICA

WILD "CAFFEIN-FREE" COFFEE TREE
Mantsaka or *Café Sauvage* — Madagascar

only one; and it may not be out of place here to describe briefly some of the other varieties that are produced commercially. *Coffea liberica* is one of these plants. The quality of the beverage made from its berries is inferior to that of *Coffea arabica*, but the plant itself offers distinct advantages in its hardy growing qualities. This makes it attractive for hybridization.

The *Coffea liberica* tree is much larger and sturdier than the *Coffea arabica*, and in its native haunts it reaches a height of 30 feet. It will grow in a much more torrid climate and can stand exposure to strong sunlight. The leaves are about twice as long as those of *arabica*, being six to twelve inches in length, and are very thick, tough, and leathery. The apex of the leaf is acute. The flowers are larger than those of *arabica*, and are borne in dense clusters. At any time during the season, the same tree may bear flowers, white or pinkish, and fragrant, or even green, together with fruits, some green, some ripe and of a brilliant red. The corolla has been known to have seven segments, though as a rule it has five. The fruits are large, round, and dull red; the pulps are not juicy, and are somewhat bitter. Unlike *Coffea arabica*, the ripened drupes do not fall from the trees, and so the picking can be delayed at the planter's convenience.

Among the allied Liberian species Dr Cramer recognizes:

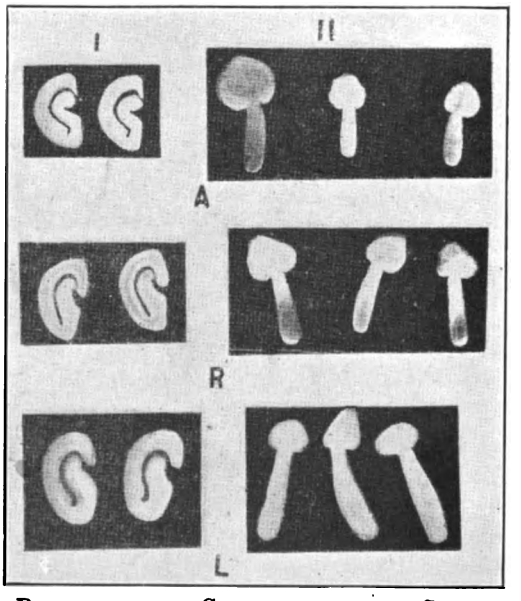
Abeokutae, having small leaves of a bright green, flower buds often pink just before opening (in Liberian coffee never), fruit smaller with sharply striped red and yellow shiny skin, and producing somewhat smaller beans than Liberian coffee, but beans whose flavor and taste are praised by brokers;

Dewevrei, having curled edged leaves, stiff branches, thick-skinned berries, sometimes pink flowers, beans generally smaller than in *C. liberica*, but of little interest to the trade:

Arnoldiana, a species near to *Coffea Abeokutae* having darker foliage and the even colored small berries:

Laurentii Gillet, a species not to be confused with the *C. Laurentii* belonging to the *robusta* coffee, but standing near to *C. liberica*, characterized by oblong rather than thin-skinned berries;

Excelsa, a vigorous, disease-resisting species discovered in 1905 by Aug. Chevalier in West



DIFFERENTIATING CHARACTERISTICS OF COFFEE BEANS, IN CROSS-SECTION
Col. I. Mature bean. Col. II. Embryo.
A. Coffea arabica, R. Coffea robusta, L. Coffea liberica

COFFEA ARABICA BERRIES GROWN IN THE HAWAIIAN ISLANDS

Africa, in the region of the Chari River, not far from Lake Tchad. The broad, dark-green leaves have an under side of light green with a bluish tinge; the flowers are large and white, borne in axillary clusters of one to five; the berries are short and broad, in color crimson, the bean smaller than *robusta*, very like *Mocha*, but in color a bright yellow like *liberica*. The caffein content of the coffee is high, and the aroma is very pronounced;

Dybowskii, another disease-resisting variety similar to *excelsa*, but having different leaf and fruit characteristics;

Lamboray, having bent gutter-like leaves, and soft-skinned, oblong fruit;

Wanni Rukula, having large leaves, a vigorous growth, and small berries;

Coffea aruwimensis, being a mixture of different types.

The last three types were received by Dr. Cramer at Bangelan from Frère Gillet in the Belgian Congo, and were still under trial in Java in 1919.

Coffea Robusta

Emil Laurent, in 1898, discovered a species of coffee growing wild in Congo. This was taken up by a horticultural firm of Brussels, and cultivated for the market. This firm gave to the coffee the name *Coffea robusta*, although it had already been given the name of the discoverer, being known as *Coffea Laurentii*. The plant differs widely from both *arabica* and *liberica*, being considerably larger than either. The tree is umbrella-shaped, due to the fact that its branches are very long and bend toward the ground.

The leaves of *robusta* are much thinner than those of *liberica*, though not as thin as those of *arabica*. The tree, as a whole, is a very hardy variety and even bears blossoms when it is less than a year old. It blossoms throughout the entire year, the flowers having six-parted corollas. The drupes are smaller than those of *liberica;* but are much thinner skinned, so that the coffee bean is actually not any smaller. The drupes mature in ten months. Although the plants bear as early as the first year, the yield for the first two years is of no account; but by the fourth year the crop is large.

Arno Viehoever, pharmacognosist in charge of the pharmacognosy laboratory of the Bureau of Chemistry, United States Department of Agriculture, has recently

ROBUSTA COFFEE IN FLOWER, PREANGER, JAVA

COFFEE ESTATE IN THE LUQUILLO MOUNTAINS, PORTO RICO

JAPANESE LABORERS PICKING COFFEE ON KONA SIDE, ISLAND OF HAWAII

COFFEE UNDER THE STARS AND STRIPES

ONE-YEAR-OLD ROBUSTA ESTATE, ON SUMATRA'S WEST COAST

announced findings confirming Hartwich which appear to permit of differentiation between *robusta, arabica,* and *liberica.*[4] These are mainly the peculiar folding of the endosperm, showing quite generally a distinct hook in the case of the *robusta* coffee bean. The size of the embryo, and especially the relation of the rootlet to hypercotyl, will be found useful in the differentiation of the species *Coffea arabica, liberica,* and *robusta* (see cut, page 142).

Viehoever and Lepper carried on a series of cup tests of *robusta,* the results as to taste and flavor being distinctly favorable.[4] They summarized their studies and tests as follows:

> The time when coffee could be limited to beans obtained from plants of *Coffea arabica* and *Coffea liberica* has passed. Other species, with qualities which make them desirable, even in preference to the well reputed named ones, have been discovered and cultivated. Among them, the species or group of *Coffea robusta* has attained a great economic significance, and is grown in increasing amounts. While it has, as reports seem to indicate, not as yet been possible to obtain a strain that would be as desirable in flavor as the old "standard" *Coffea arabica,* well known as Java or "Fancy Java" coffee, its merits have been established.
>
> The botanical origin is not quite cleared up, and the classification of the varieties belonging to the *robusta* group deserves further study. Anatomical means of differentiating *robusta* coffee from other species or groups, may be applied as distinctly helpful. . . .
>
> As is usual in most of the coffee species, caffein is present. The amount appears to be, on an average, somewhat larger (even exceeding 2.0 percent) than in the South American coffee species. In no instance, however, did the amount exceed the maximum limits observed in coffee in general. . . .
>
> Due to its rapid growth, early and prolific yield, resistance to coffee blight, and many other desirable qualities, *Coffea robusta* has established "its own". In the writers' judgment, *robusta* coffee deserves consideration and recognition.

Among the *robusta* varieties, *Coffea canephora* is a distinct species, well characterized by growth, leaves, and berries. The branches are slender and thinner than *robusta;* the leaves are dark green and narrower; the flowers are often tinged with red; the unripe berries are purple, the ripe berries bright red and oblong. The produce is like *robusta,* only the shape of the bean, somewhat narrower and more oblong, makes it look more attractive. *Coffea canephora,*

[4] *Journal of the Association of Official Agricultural Chemists,* Nov. 15, 1921. (vol. v: no. 2: pp. 274-288.)

like *C. robusta,* seems better fitted to higher altitudes.

Other *canephora* varieties include:

Madagascar, having small, slightly striped, bright red berries and small round beans;

Quillouensis, having dark green foliage and reddish brown young leaves; and,

Stenophylla Paris, with purplish young berries.

These last two named were under test at the Bangelan gardens in 1919.

Among other allied *robusta* species are:

Ugandæ, whose produce is said to possess a better flavor than *robusta;*

Bukobensis, different from *Ugandæ* in the color of its berries, which are a dark red; and

Quillou, having bright red fruit, a copper-colored silver skin, three pounds of fruit producing one pound of market coffee. Some people prefer *Quillou* to *robusta* because of the difference in the taste of the roasted bean.

Some Interesting Hybrids

The most popular hybrid belongs to a crossing of *liberica* and *arabica.* Cramer states that the beans of this hybrid make an excellent coffee combining the strong taste of the *liberica* with the fine flavor of the old Government Java (*arabica*), adding:

> The hybrids are not only of value to the roaster, but also to the planter. They are vigorous trees, practically free from leaf disease; they stand drought well and also heavy rains; they are not particular in regard to shade and upkeep; never fail to give a fair and often a rather heavy crop. The fruit ripens all the year around, and does not fall so easily as in the case of *arabica.*

Among other hybrids (many were still under trial in 1919) may be mentioned: *Coffea excelsia x liberica; C. Abeokutæ x liberica; C. Dybowskii x excelsa; C. stenophylla x Abeokutæ; C. congensis x Ugandæ; C. Ugandæ x congensis;* and *C. robusta x Maragogipe.*

There are many species of *Coffea* that stand quite apart from the main groups, *arabica, robusta* and *liberica*; but while some are of commercial value, most of them are interesting only from the scientific point of view. Among the latter may be mentioned: *Coffea bengalensis, C. Perieri, C. mauritiana, C. macrocarpa, C. madagascariensis,* and *C. schumanniana.*

M. Teyssonnier, of the experimental garden at Camayenne, French Guinea, West Africa, has produced a promising species of coffee known as *affinis.* It is a hybrid of *C. stenophylla* with a species of *liberica.*

COFFEA QUILLOU FLOWERS IN FULL BLOOM

Among other promising species recognized by Dr. Cramer are:

Coffea congensis, whose berry resembles that of *C. arabica,* when well prepared for the market being green or bluish; and

Coffea congensis var. Chalotii, probably a hybrid of *C. congensis* with *C. canephora.*

Caffein-free Coffee

Certain trees growing wild in the Comoro Islands and Madagascar are known as caffein-free coffee trees. Just whether they are entitled to this classification or not is a question. Some of the French and German investigators have reported coffee from these regions that was absolutely devoid of caffein. It was thought at first that they must represent an entirely new genus; but upon investigation, it was found that they belonged to the genus *Coffea,* to which all our common coffees belong. Professor Dubard, of the French National Museum and Colonial Garden, studied these trees botanically and classified them as *C. Gallienii, C. Bonnieri, C. Mogeneti,* and *C. Augagneuri.* The beans of berries from these trees were analyzed by Professor Bertrand and pronounced caffein-free; but Labroy, in writing of the same coffee, states that, while the bean is caffein-free, it contains a very bitter substance, cafamarine, which makes the infusion unfit for use. Dr. O. W. Willcox[5], in examining some specimens of wild coffee from Madagascar, found that the bean was not caffein-free; and though the caffein content was low, it was no lower than in some of the Porto Rican varieties.

Hartwich[6] reports that Hanausek found no caffein in *C. mauritiana, C. humboltiana, C. Gallienii, C. Bonnerii, and C. Mogeneti.*

Fungoid Disease of Coffee

The coffee tree, like every other living thing, has specific diseases and enemies, the most common of which are certain fungoid diseases where the mycelium of the fungus grows into the tissue and spots the leaves, eventually causing them to fall, thus robbing the plant of its only means of elaborating food. Its most deadly enemy in the insect world is a small insect of the lepidopterous variety, which is known as the coffee-leaf miner. It is closely related to the clothes moth and, like the moth, bores in its larval stage, feeding on the mesophyl of the leaves. This gives the leaves an appearance of being shriveled or dried by heat.

There are three principal diseases, due to fungi, from which the coffee plants

[5] *The Tea and Coffee Trade Jour.,* 1912. (vol. xxiii: no. 3.)
[6] *Die Menschlichen Genusmittel,* 1911. (p. 300.)

AN EIGHTEEN-MONTHS'-OLD COFFEA QUILLOU TREE IN BLOSSOM

suffer. The most common is known as the leaf-blight fungus, *Pellicularia tokeroga*, which is a slow-spreading disease, but one that causes great loss. Although the fungus does not produce spores, the leaves die and dry, and are blown away, carrying with them the dried mycelium of the fungus. This mycelium will start to grow as soon as it is supplied with a new moist coffee leaf to nourish it. The method of getting rid of this disease is to spray the trees in seasons of drought.

It was a fungoid disease known as the *Hemileia vastatrix* that attacked Ceylon's coffee industry in 1869, and eventually destroyed it. It is a microscopic fungus whose spores, carried by the wind, adhere to and germinate upon the leaves of the coffee tree[1].

Another common disease is known as the root disease, which eventually kills the tree by girdling it below the soil. It spreads slowly, but seems to be favored by collections of decaying matter around the base of the tree. Sometimes the digging of ditches around the roots is sufficient to protect it. The other common disease is due to *Stilbium flavidum*, and is found only in regions of great humidity. It affects both the leaf and the fruit and is known as the spot of leaf and fruit.

[1] See chapter XVI.

COFFEA UGANDÆ BENT OVER BY A HEAVY CROP

CHAPTER XVI

THE MICROSCOPY OF THE COFFEE FRUIT

How the beans may be examined under the microscope, and what is revealed — Structure of the berry, the green, and the roasted bean — The coffee leaf disease under the microscope — Value of microscopic analysis in detecting adulteration

THE microscopy of coffee is, on the whole, more important to the planter than to the consumer and the dealer; while, on the other hand, the microscopy is of paramount importance to the consumer and the dealer as furnishing the best means of determining whether the product offered is adulterated or not. Also, from this standpoint, the microscopy of the plant is less important than that of the bean.

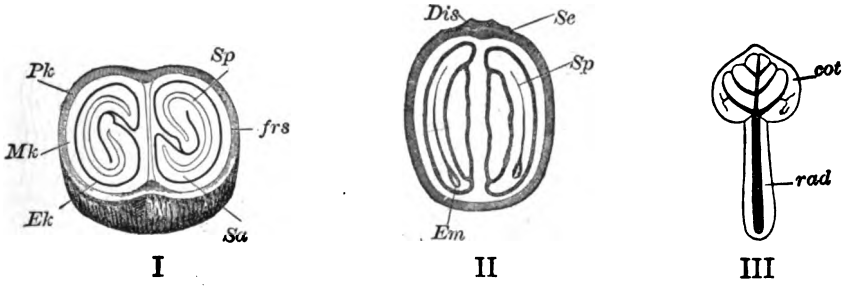


Fig. 331. Coffee (*Coffea arabica*). I—Cross-section of berry, natural size; *Pk*, outer pericarp; *Mk*, endocarp; *Ek*, spermoderm; *Sa*, hard endosperm; *Sp*, soft endosperm. II—Longitudinal section of berry, natural size; *Dis*, bordered disk; *Se*, remains of sepals; *Em*, embryo. III—Embryo, enlarged; *cot*, cotyledon; *rad*, radicle. (Tschirch and Oesterle.)

The Fruit and the Bean

The fruit, as stated in chapter XV, consists of two parts, each one containing a single seed, or bean. These beans are flattened laterally, so as to fit together, except in the following instances: in the peaberry, where one of the ovules never develops, the single ovule, having no pressure upon it, is spherical; in the rare instances where three seeds are found, the grains are angular.

The coffee bean with which the consumer is familiar is only a small part of the fruit. The fruit, which is the size of a small cherry, has, like the cherry, an outer fleshy portion called the pericarp. Beneath this is a part like tissue paper, spoken of technically as the parchment, but known scientifically as the endocarp. Next in position to this, and covering the seed, is the so-called spermoderm, which means the seed skin, referred to in the trade as the silver skin. Small portions of this silver skin are always to be found in the cleft of the coffee bean.

The coffee bean is the embryo and its food supply; the embryo is that part of the seed which, when supplied with food and moisture, develops into a new plant. The

embryo of the coffee is very minute (Fig. 331, II, *Em*) [1]; and the greater part of the seed is taken up by the food supply, consisting of hard and soft endosperm (Fig. 331, I and II, *Sa, Sp*). The minute embryo consists of two small thick leaves, the cotyledons (Fig. 331, III, *cot*), a short stem, invisible in the undissected embryo, and a small root, the radicle (Fig. 331, III, *rad*).

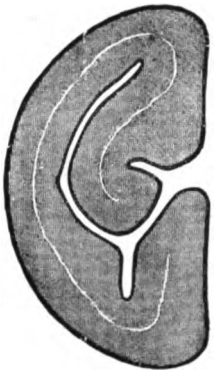


Fig. 332. Coffee. Cross section of bean showing folded endosperm with hard and soft tissues. x6. (Moeller)

Fruit Structure

In order to examine the structure of these layers of the fruit under the microscope, it is necessary to use the pericarp dry, as it is not easily obtainable in its natural condition. If desired, an alcoholic specimen may be used, but it has been found that the dry method gives more satisfactory results. The dried pericarp is about 0.5 mm thick. Great difficulty is experienced in cutting microtome sections of pericarp when the specimen is embedded in paraffin, because the outer layers are soft and the endocarp is hard, and the two parts of the section separate at this point. To overcome this, the sections might also be embedded in celloidin. When the sections are satisfactory, they may be stained with any of the double stains ordinarily used in the study of plant histology.

A section cut crosswise through the entire fruit would present the appearance shown in Fig. 333. The cells of the epicarp are broad and polygonal, sometimes regularly four-sided, about 15 - 35 μ broad. At intervals along the surface of the epicarp are stomata, or breathing pores, surrounded by guard cells. The next layer of the pericarp is the mesocarp (Figs. 333, 334, 335), the cells of which are larger and more regular in outline than the epicarp. The cells of the mesocarp become as large as 100 μ broad, but in the inner parts of the layer they become very much flattened. Fibrovascular bundles are scattered through the compressed cells of the mesocarp. The cell walls are thick; and large, amorphous, brown masses are found within the cell; occasionally, large crystals are found in the outer part of the layer. The fibrovascular bundles consist mainly of bast and wood fibers and vessels. The bast fibers are as large as 1 mm long and 25 μ broad, with

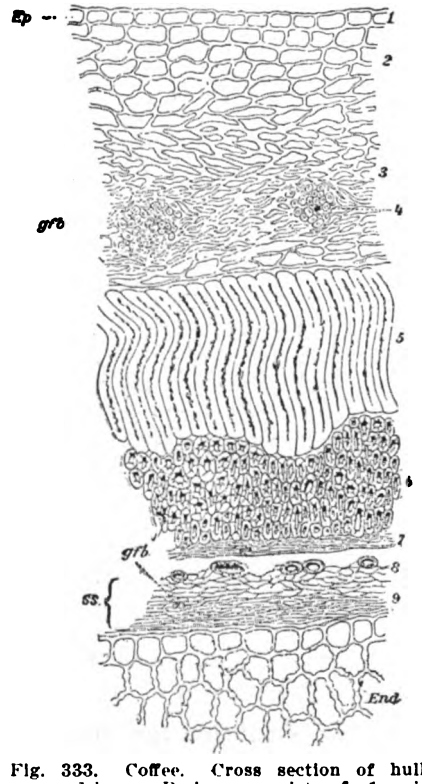


Fig. 333. Coffee. Cross section of hull and bean. Pericarp consists of: 1, epicarp; 2-3, layers of mesocarp, with 4, fibro-vascular bundle; 5, palisade layer; and 6, endocarp; *ss*, spermoderm, consists of 8, sclerenchyma, and 9, parenchyma; *End*, endosperm (Tschirch and Oesterle)

[1]These and all other numbered drawings in this chapter are from Andrew L. Winton's *The Microscopy of Vegetable Foods*, copyright 1916, and reprinted by permission.

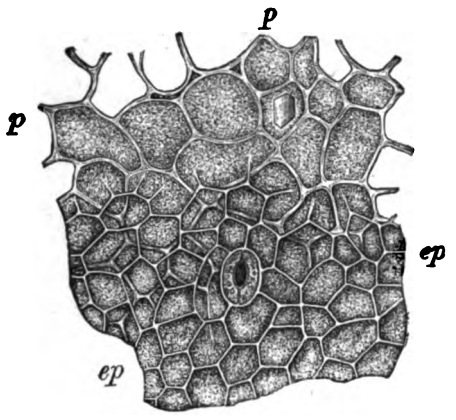


Fig. 334. Coffee. Surface view of *ep*, epicarp, and *p*, outer parenchyma of mesocarp. x160. (Moeller)

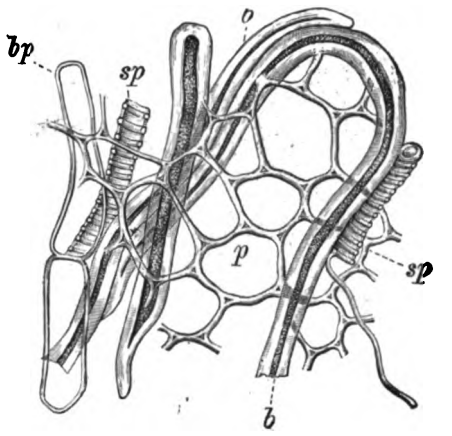


Fig. 335. Coffee. Elements of pericarp in surface view. *p*, parenchyma; *bp*, parenchyma of fibro-vascular bundle; *b*, bast fiber; *sp*, spiral vessel. x160. (Moeller)

thick walls and very small *lumina*. Spiral and pitted vessels are also present.

The layer next to this is a soft tissue, parenchyma (Fig. 333, 5; Fig. 334, *p*). The parenchyma, or palisade cells as they are called, is a thin-walled tissue in which the cells are elongated, from which fact they receive their name. The walls of these cells, though very thin, are mucilaginous, and capable of taking up large amounts of water. They stain well with the aniline stains.

The endocarp (Fig. 336) is closely connected with the palisade layer and has thin-walled cells that closely resemble, in all respects, the endocarp of the apple. The outer layer consists of thick-walled fibers, which are remarkably porous (Fig. 333, 6; Fig. 336) while the fibers of the inner layer are thin-walled and run in the transverse direction.

The Bean Structure

Spermoderm, or silver skin, is not difficult to secure for microscopic analysis; because shreds of it remain in the groove of the berry, and these shreds are ample for examination. It can readily be removed without tearing, if soaked in water for a few hours. The spermoderm is thin enough not to need sectioning. It consists of two elements — sclerenchyma and parenchyma cells. (Figs. 333, 337, *st*, *p*).

Sclerenchyma forms an uninterrupted covering in the early stages of the seed; but as the seed develops, surrounding tissues grow more rapidly than the sclerenchyma, and the cells are pushed apart and scattered. The cells occurring in the cleft of the berry are straight, narrow, and long, becoming as long as 1 mm, and resemble bast fibers somewhat. On the surface of the berry, and sometimes in the cleft, there are found smaller, thicker cells, which are irregular in outline, club-shaped and vermiform types predominating.

Parenchyma cells form the remainder of the spermoderm; and these are partially obliterated, so that the structure is not easily seen, appearing almost like a solid membrane. The raphe runs through the parenchyma found in the cleft of the berry.

The endosperm (Figs. 333; 338) consist of small cells in the outer part, and large cells, frequently as thick as 100 μ, in the inner part. The cell walls are thickened and knotted. Certain of the inner cells have mucilaginous walls which when treated with water disappear, leaving only the middle lamellae, which gives the section a peculiar appearance. The cells contain no starch, the reserve food supply being stored cellulose, protein, and aleurone grains. Various investigators report the presence of sugar, tannin, iron, salts, and caffein.

The embryo (Fig. 331, III) may be obtained by soaking the bean in water for several hours, cutting through the cleft and carefully breaking apart the endosperm. If

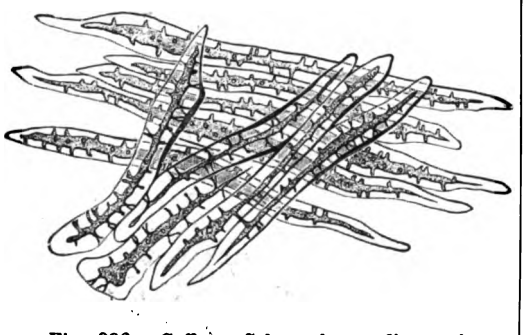


Fig. 336. Coffee. Sclerenchyma fibers of endocarp. x160. (Moeller)

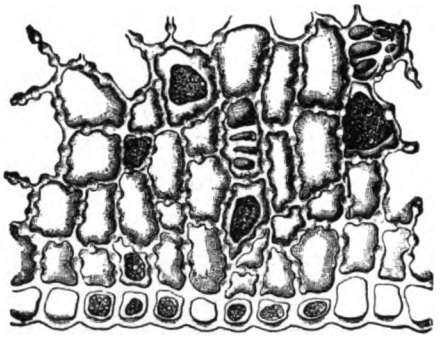


Fig. 338. Coffee. Cross-section of outer layers of endosperm, showing knotty thickenings of cell walls. x160. (Moeller)

it is now soaked in diluted alkali, the embryo protrudes through the lower end of the endosperm. It is then cleared in alkali, or in chloral hydrate. The cotyledons shown have three pairs of veins, which are slightly netted. The radicle is blunt and is about ¾ mm in length, while the cotyledons are ½ mm long.

The Coffee-Leaf Disease

The coffee tree has many pests and diseases; but the disease most feared by planters is that generally referred to as the coffee-leaf disease, and by this is meant the fungoid *Hemileia vastatrix*, which as told in chapter XV, destroyed Ceylon's once prosperous coffee industry. As it has since been found in nearly all coffee-producing countries, it has become a nightmare in the dreams of all coffee planters. The microscope shows how the spores of this dreaded fungus, carried by the winds upon a leaf of the coffee tree, proceed to germinate at the expense of the leaf; robbing it of its nourishment, and causing it to droop and to die. A mixture of powdered lime and sulphur has been found to be an effective germicide, if used in time and diligently applied.

Fig. 330. Coffee. Tissues of embryo in section. x160. (Moeller)

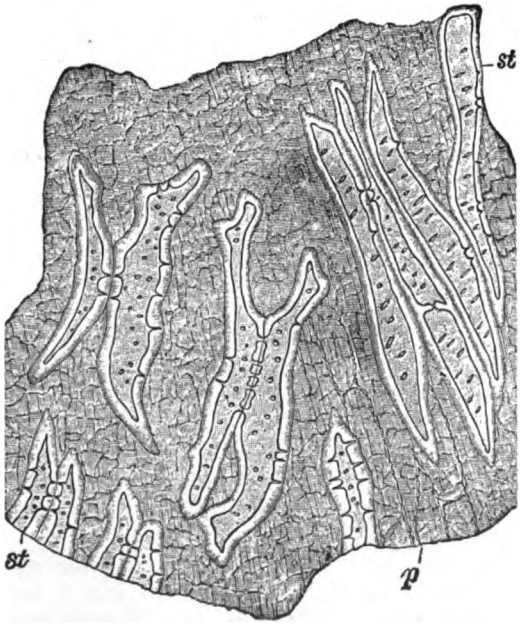


Fig. 337. Coffee. Spermoderm in surface view. *st*, sclerenchyma; *p*, compressed parenchyma. x160. (Moeller)

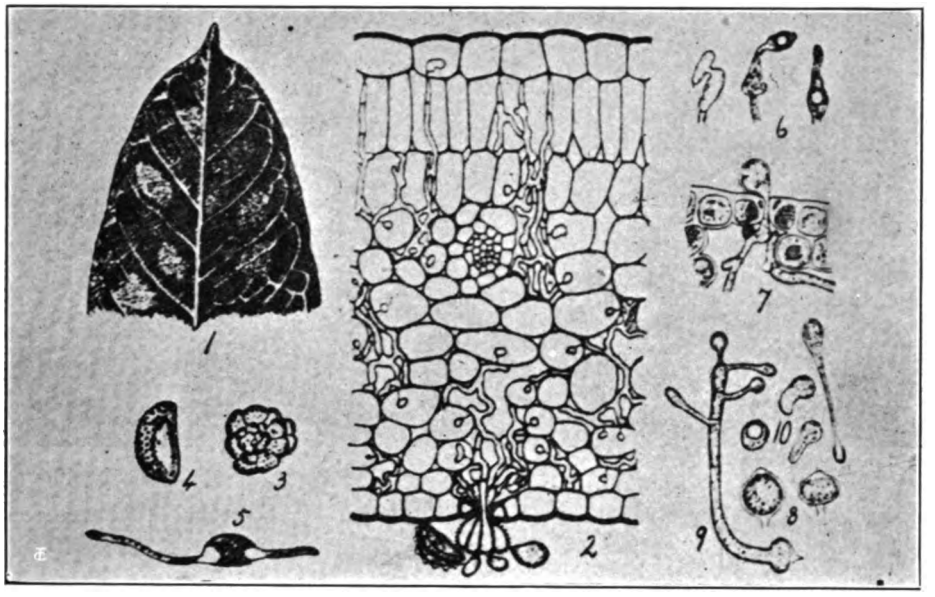
Value of Microscopic Analysis

The value of the microscopic analysis of coffee may not be apparent at first sight; but when one realizes that in many cases the microscopic examination is the only way to detect adulteration in coffee, its importance at once becomes apparent. In many instances the chemical analysis fails to get at the root of the trouble, and then the only method to which the tester has recourse is the examination of the suspected material under the scope. The mixing of chicory

with coffee has in the past been one of the commonest forms of adulteration. The microscopic examination in this connection is the most reliable. The coffee grain will have the appearance already described. Microscopically, chicory shows numerous thin-walled parenchymatous cells, lactiferous vessels, and sieve tubes with transverse plates. There are also present large vessels with huge, well-defined pits.

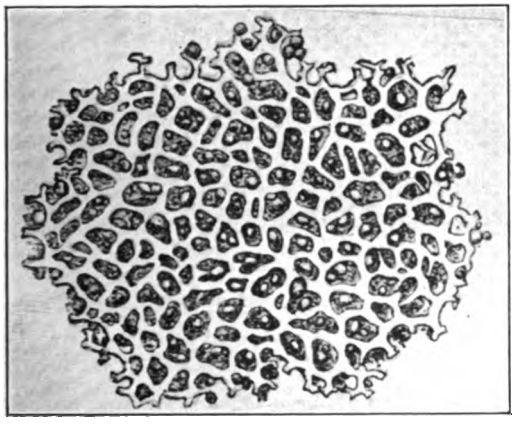
Roasted date stones have been used as adulterants, and these can be detected quite readily with the aid of the microscope, as they have a very characteristic microscopic appearance. The epidermal cells are almost oblong, while the parenchymatous cells are large, irregular and contain large quantities of tannin.

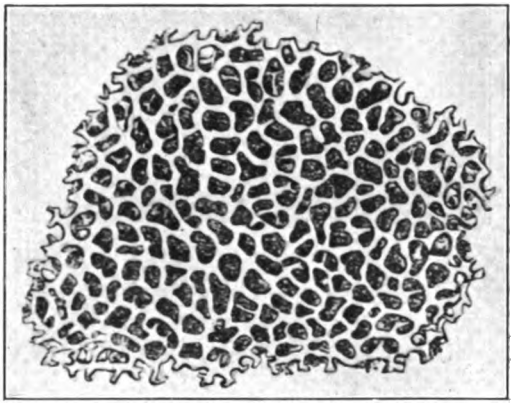
Adulteration and adulterants are considered more fully in chapter XVII.



COFFEE LEAF DISEASE (HEMILEIA VASTATRIX)

1, under surface of affected leaf, x ½; 2, section through same showing mycelium, haustoria, and a spore-cluster; 3, a spore-cluster seen from below; 4, a uredospore; 5, germinating uredospore; 6, appressorial swellings at tips of germ-tubes; 7, infection through stoma of leaf; 8, teleutospores; 9, teleutospore germinating with promycelium and sporidia; 10, sporidia and their germination (2 after Zimmermann, 3 after Delacroix, 4-10 after Ward)

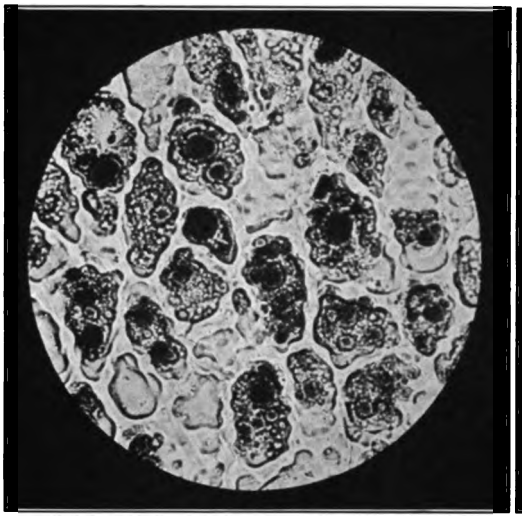




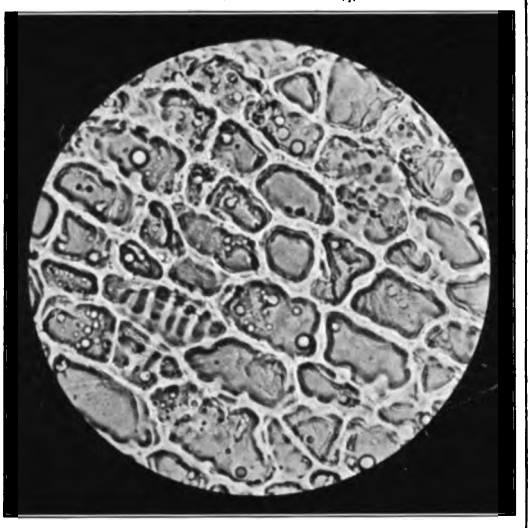
GREEN AND ROASTED COFFEE UNDER THE MICROSCOPE

Green bean, showing the size and form of the cells as well as the drops of oil contained within their cavities. Drawn with the camera lucida, and magnified 140 diameters.

A fragment of roasted coffee under the microscope. Drawn with the camera lucida, and magnified 140 diameters.

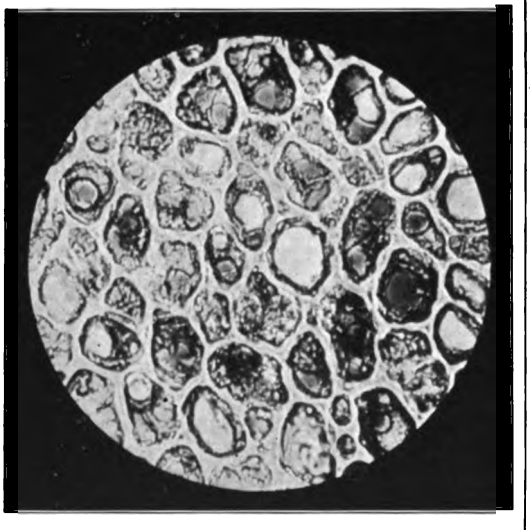


BOGOTA, GREEN
Longitudinal — Magnified 200 diameters



BOGOTA, GREEN
Cross Section — Magnified 200 diameters

BOGOTA, GREEN
Tangential — Magnified 200 diameters



BOGOTA, ROASTED
Tangential — Magnified 200 diameters

GREEN AND ROASTED BOGOTA COFFEE UNDER THE MICROSCOPE

These pictures serve to demonstrate that the coffee bean is made up of minute cells that are not broken down to any extent by the roasting process. Note that the oil globules are more prominent in the green than in the roasted product

CHAPTER XVII

THE CHEMISTRY OF THE COFFEE BEAN

Chemistry of the preparation and treatment of the green bean — Artificial aging — .Renovating damaged coffees — Extracts — "Caffetannic acid" — Caffein, caffein-free coffee — Caffeol — Fats and oils — Carbohydrates — Roasting — Scientific aspects of grinding and packaging — The coffee brew — Soluble coffee — Adulterants and substitutes — Official methods of analysis

By Charles W. Trigg

Industrial Fellow of the Mellon Institute of Industrial Research, Pittsburgh, 1916 - 1920

WHEN the vast extent of the coffee business is considered, together with the intimate connection which coffee has with the daily life of the average human, the relatively small amount of accurate knowledge which we possess regarding the chemical constituents and the physiological action of coffee is productive of amazement.

True, a painstaking compilation of all the scientific and semi-scientific work done upon coffee furnishes quite a compendium of data, the value of which is not commensurate with its quantity, because of the spasmodic nature of the investigations and the non-conclusive character of the results so far obtained. The following general survey of the field argues in favor of the promulgation of well-ordered and systematic research, of the type now in progress at several places in the United States, into the chemical behavior of coffee throughout the various processes to which it is subjected in the course of its preparation for human consumption.

Green Coffee

One of the few chemical investigations of the growing tree is the examination by Graf of flowers from 20-year-old coffee trees, in which he found 0.9 percent caffein, a reducing sugar, caffetannic acid, and phytosterol. Power and Chestnut[1] found 0.82 percent caffein in air-dried coffee leaves, but only 0.087 percent of the alkaloid in the stems of the plant separated from the leaves. In the course of a study[2] instituted for the purpose of determining the best fertilizers for coffee trees, it developed that the cherries in different stages of growth show a preponderance of potash throughout, while the proportion of P_2O_5 attains a maximum in the fourth month and then steadily declines.

Experiments are still in progress to ascertain the precise mineral requirements of the crop as well as the most suitable stage at which to apply them. During the first five months the moisture content undergoes a steady decrease, from 87.13 percent to 65.77 percent, but during the final ripening stage in the last month there is a rise of nearly 1 percent. This may explain the premature falling and failure to ripen of the crop on certain soils, especially in years of low rainfall. Malnutrition of the trees may result also in the production of oily beans.[3]

---

[1] *Jour. Am. Chem. Soc.*, 1919 (vol. xli : p. 1306).

[2] Anstead, R. D. *Annals on Applied Biology*, 1915 (vol. i : pp. 299-302).

[3] Huntington, L. M. *Tea and Coffee Trade Jour.*, 1917 (vol. xxxiii : p. 228).

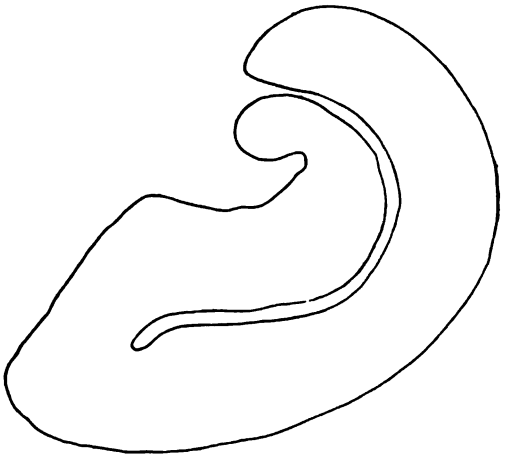
The coffee berry comprises about 68 percent pulp, 6 percent parchment, and 26 percent clean coffee beans. The pulp is easily removed by mechanical means; but in order to separate the soft, glutinous, saccharine parchment, it is necessary to resort to fermentation, which loosens the skin so that it may be removed easily, after which the coffee is properly dried and aged. There is first a yeast fermentation producing alcohol; and then a bacterial action giving mainly inactive lactic acid, which is the main factor in loosening the parchment. For the production of the best coffee, acetic acid fermentation (which changes the color of the bean) and temperature above 60° should be avoided, as these inhibit subsequent enzymatic action.[4]

Various schemes have been proposed for utilizing the large amount of pulp so obtained in preparing coffee for market. Most of these depend upon using the pulp as fertilizer, since fresh pulp contains 2.61 percent nitrogen, 0.81 percent P_2O_5, 2.38 percent potassium, and 0.57 percent calcium. One procedure[5] in particular is to mix pulp with sawdust, urine, and a little lime, and then to leave this mixture covered in a pit for a year before using. In addition to these mineral matters, the pulp also contains about 0.88 percent of caffein and 18 to 37 percent sugars. Accordingly, it has been proposed[6] to extract the caffein with chloroform, and the sugars with acidulated water. The aqueous solution so obtained is then fermented to alcohol. The insoluble portion left after extraction can be used as fuel, and the resulting ash as fertilizer.

The pulp has been dried and roasted for use in place of the berry, and has been imported to England for this purpose. It is stated that the Arabs in the vicinity of Jiddah discard the kernel of the coffee berries and make an infusion of the husk.[7]

Quality of green coffee is largely dependent upon the methods used and the care taken in curing it, and upon the conditions obtaining in shipment and storage. True, the soil and climatic conditions play a determinative rôle in the creation of the characteristics of coffee, but these do not offer any greater opportunity for constructive research and remunerative improvement than does the development of methods and control in the processes employed in the preparation of green coffee for the market.

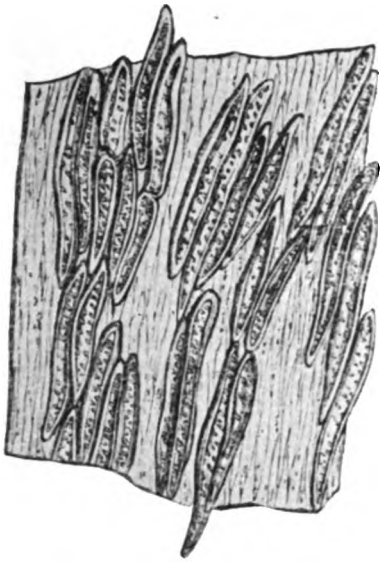
Storage prior and subsequent to shipment, and circumstances existing during transportation, are not to be disregarded as factors contributory to the final quality of the coffee. The sweating of mules carrying bags of poorly packed coffee, and the absorption of strong foreign aromas and flavors from odoriferous substances stored in too close proximity to the coffee beans, are classic examples of damage that bear iterative mention. Damage by sea water, due more to the excessive moisture than to the salt, is not so common an occurrence now as heretofore. However, a cheap and thoroughly effective means of ethically renovating coffee which has been damaged in this manner would not go begging for commercial application.



CROSS-SECTION OF THE ENDOSPERM OR HARD STRUCTURE OF THE GREEN BEAN

That green coffee improves with age, is a tenet generally accepted by the trade. Shipments long in transit, subjected to the effects of tropical heat under closely battened hatches in poorly ventilated holds, have developed into much-prized yellow matured coffee. Were it not for the large capital required and the attendant prohibitive carrying charges, many roasters would permit their coffees to age more thoroughly before roasting. In fact, some roasters do indulge this desire in regard to a portion of their stock. But were it feasible to treat

[4] Gorter, *Ann.* (vol. ccclxxii: pp. 237-46).
Schulte, A. *Z. Nahr. Genussm.* (vol. xxvii: pp. 209-25).
Loew, Oscar. *Ann. Rep. P. R. Agr. Expt. Sta.*, 1907 (pp. 41-55).
[5] Sencial. *El Hacendado Mex.* (vol. ix: p. 191).
[6] Pique, R. *Bull. Assoc. Chim. sucr. dist.* (vol. xxiv: pp. 1210-13).
[7] *Pharm. Jour.*, 1886 (vol. xvii: p. 656).



PORTION OF THE INVESTING MEMBRANE, SHOWING ITS STRUCTURE
Drawn with the camera lucida, and magnified 140 diameters

and hold coffees long enough to develop their attributes to a maximum, still the exact conditions which would favor such development are not definitely known. What are the optimum temperature and the correct humidity to maintain, and should the green coffee be well ventilated or not while in storage? How long should coffee be stored under the most favorable conditions best to develop it? Aging for too long a period will develop flavor at the expense of body; and the general cup efficiency of some coffees will suffer if they be kept too long.

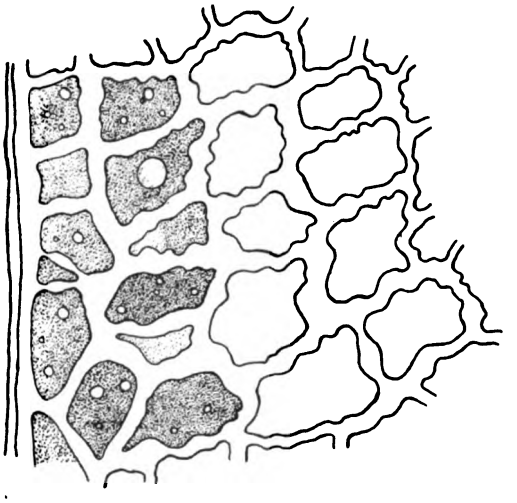
The exact reason for improvement upon aging is in no wise certain, but it is highly probable that the changes ensuing are somewhat analogous to those occurring in the aging of grain. Primarily an undefined enzymatic and mold action most likely occurs, the nature of the enzymes and molds being largely dependent upon the previous treatment of the coffee. Along with this are a loss of moisture and an oxidation, all three actions having more evident effects with the passage of time.

Artificial Aging

In consideration of the higher prices which aged products demand, attempts have naturally been made to shorten by artificial means the time necessary for their natural production. Some of these methods depend upon obtaining the most favorable conditions for acceleration of the enzyme action; others, upon the effects of microorganisms; and still others, upon direct chemical reaction or physical alteration of the green bean.

One of the first efforts toward artificial maturing was that of Ashcroft[8], who argued from the improved nature of coffee which had experienced a delayed voyage. His method consisted of inclosing the coffee in sweat-boxes having perforated bottoms and subjecting it to the sweating action of steam, the boxes being enclosed in an oven or room maintained at the temperature of steam.

Timby[9] claimed to remove dusts, foreign odors, and impurities, while attaining in a few hours or days a ripening effect normally secured only in several seasons. In this process, the bagged coffee is placed in autoclaves and subjected to the action of air at a pressure of 2 to 3 atmospheres and a temperature of 40° to 100° F. The temperature should seldom be allowed to rise above 150° F. The pressure is then allowed to escape and a partial vacuum created in the apparatus. This alteration of pressure and vacuum is continued until the desired maturation is obtained. Desvignes[10] employs a similar procedure, although he accomplishes seasoning by



STRUCTURE OF THE GREEN BEAN
Showing thick-walled cells enclosing drops of oil

[8] U. S. Pat., 113,832, April 18, 1871.
[9] U. S. Pat., 660,602, Oct. 30, 1900.
[10] French Pat., 379,036, Aug. 28, 1906.

treating the coffee also with oxygen or ozone.[11] First the coffee is rendered porous by storage in a hot chamber, which is then exhausted prior to admission of the oxygen. The oxygen can be ozonized in the closed vessel while in contact with the coffee. Complete aging in a few days is claimed.

Weitzmann[12] adopts a novel operation, by exposing bags of raw coffee to the action of a powerful magnetic field, obtained with two adjustable electro-magnets. The claim that a maturation naturally produced in several years is thus obtained in ½ to 2 hours is open to considerable doubt. A process that is probably attended with more commercial success is that of Gram[13] in which the coffee is treated with gaseous nitrogen dioxid.

By far the most notable progress in this field, both scientifically and commercially, has been made by Robison[14] with his "culturing" method. Here the green coffee is washed with water, and then inoculated with selected strains of micro-organisms, such as *Ochraeceus* or *Aspergillus Wintii*. Incubation is then conducted for 6 to 7 days at 90° F. and 85 percent relative humidity. Subsequent to this incubation, the coffee is stored in bins for about ten days; after which it is tumbled and scoured. With this process it is possible to improve the cupping qualities of a coffee to a surprising degree.

Renovating Damaged Coffees

Sophistication has often been resorted to in order ostensibly to improve damaged or cheap coffee. Glazing, coloring, and polishing of the green beans was openly and covertly practised until restricted by law. The steps employed did not actually improve the coffee by any means, but merely put it into condition for more ready sale. An apparently sincere endeavor to renovate damaged coffee was made by Evans[15] when he treated it with an aqueous solution of sulphuric acid having a density of 10.5° Baumé. After agitation in this solution, the beans were washed free from acid and dried. In this manner discolorations and impurities were removed and the beans given a fuller appearance.

The addition of glucose, sucrose, lactose, or dextrin to green coffees is practised by von Niessen[16] and by Winter[17], with the object of giving a mild taste and strong aroma to "hard" coffees. The addition is accomplished by impregnating, with or without the aid of vacuum, the beans with a moderately concentrated solution of the sugar, the liquid being of insufficient quantity to effect extraction. When the solution has completely disseminated through the kernels, they are removed and dried. Upon subsequent roasting, a decided amelioration of flavor is secured.

Another method developed by von Niessen[18] comprises the softening of the outer layers of the beans by steam, cold or warm water, or brine, and then surrounding them with an absorbent paste or powder, such as china clay, to which a neutralizing agent such as magnesium oxid may be added. After drying, the clay can be removed by brushing or by causing the beans to travel between oppositely reciprocated wet cloths. In the development of this process, von Niessen evidently argued that the so-called "caffetannic acid" is the "harmful" substance in coffee, and that it is concentrated in the outer layers of the coffee beans. If these be his precepts, the question of their correctness and of the efficiency of his process becomes a moot one.

A procedure which aims at cleaning and refining raw coffee, and which has been the subject of much polemical discussion, is that of Thum[19]. It entails the placing of the green beans in a perforated drum; just covering them with water, or a solution of sodium chloride or sodium carbonate, at 65° to 70° C.; and subjecting them to a vigorous brushing for from 1 to 5 minutes, according to the grade of coffee being treated. The value of this method is somewhat doubtful, as it would not seem to accomplish any more than simple washing. In fact, if anything, the process is undesirable; as some of the extractive matters present in the coffee, and particularly caffein, will be lost. Both Freund[20] and Harnack[21] hold briefs for the product produced by this method, and the latter endeavors analytically to prove its merits; but as his experimental data are questionable, his conclusions do not carry much weight.

[11] French Pat., 359,451, Nov. 15, 1905.
[12] British Pat., 26,905, Dec. 9, 1904.
[13] U. S. Pat., 843,530, Feb. 5, 1907.
[14] U. S. Pat., 1,313,209, Aug. 12, 1919.
[15] U. S. Pat., 134,792, Jan. 14, 1873.
[16] British Pat., 7,427, Mar. 24, 1910.
[17] U. S. Pat., 997,431, July 11, 1911.
[18] British Pat., 23,087, Oct. 9, 1912.
French Pat., 449,343, Oct. 12, 1912.
[19] British Pat., 21,397, Sept. 26, 1907.
French Pat., 382,238, Sept. 26, 1907.
U. S. Pat., 982,902, Jan. 31, 1911.
[20] *Pharm. Zentralhalle*, 1915 (vol. lvi: pp. 343-48).
[21] *Münch. Med. Wochschr.*, (vol. lviii: pp. 1868-72).

The Acids of Coffee

The study of the acids of coffee has been productive of much controversy and many contradictory results, few of which possess any value. The acid of coffee is generally spoken of as "caffetannic acid." Quite a few attempts have been made to determine the composition and structure of this compound and to assign it a formula. Among them may be noted those of Allen,[22] who gives it the empirical formula $C_{14}H_{16}O_7$; Hlasiwetz,[23] who represents it as $C_{15}H_{18}O_8$; Richter, as $C_{30}H_{18}O_{16}$; Griebel,[24] as $C_{18}H_{24}O_{10}$, and Cazeneuve and Haddon,[25] as $C_{21}H_{28}O_{14}$. It is variously supposed to exist in coffee as the potassium, calcium, or magnesium salt. In regard to the physical appearance of the isolated substance there is also some doubt, Thorpe[26] describing it as an amorphous powder, and Howard[27] as a brownish, syrup-like mass, having a slight acid and astringent taste.

The chemical reactions of "caffetannic acid" are generally agreed upon. A dark green coloration is given with ferric chlorid; and upon boiling it with alkalies or dilute acids, caffeic acid and glucose are formed. Fusion with alkali produces protocatechuic acid.

K. Gorter[28] has made an extensive and accurate investigation into the matter, and in reporting upon the same has made some very pertinent observations. His claim is that the name "caffetannic acid" is a misnomer and should be abandoned. The so-called "caffetannic acid" is really a mixture which has among its constituents chlorogenic acid ($C_{32}H_{38}O_{19}$), which is not a tannic acid, and coffalic acid. Tatlock and Thompson[29] have expressed the opinion that roasted coffee contains no tannin, and that the lead precipitate contains mostly coloring matter. They found only 4.5 per cent of tannin (precipitable by gelatin or alkaloids) in raw coffee.

Hanausek[30] demonstrated the presence of oxalic acid in unripe beans, and citric acid has been isolated from Liberian coffee. It also has been claimed that viridic acid, $C_{14}H_{20}O_{11}$, is present in coffee. In addition to these, the fat of coffee contains a certain percentage of free fatty acids.

It is thus apparent that even in green coffee there is no definite compound "caffetannic acid," and there is even less likelihood of its being present in roasted coffee. The conditions, high heat and oxidation, to which coffee is subjected in roasting would suffice to decompose this hypothetical acid if it were present.

In the method of analysis for caffetannic acid (No. 24) given at the end of this chapter, there are many chances of error, although this procedure is the best yet devised. Lead acetate forms three different compounds with "caffetannic acid," so that this reagent must be added with extreme care in order to precipitate the compound desired. The precipitate, upon forming, mechanically carries down with it any fats which may be present, and which are removed from it only with difficulty. The majority of the mineral salts in the solution will come down simultaneously. All of the above-mentioned organic acids form insoluble salts with lead acetate, and there will also be a tendency toward precipitation of certain of the components of caramel, the acidic polymerization products of acrolein, glycerol, etc., and of the proteins and their decomposition products.

In view of this condition of uncertainty in composition, necessity for great care in manipulation, and ever-present danger of contamination, the significance of "caffetannic acid analysis" fades. It is highly desirable that the nomenclature relevant to this analytical procedure be changed to one, such as "lead number," which will be more truly indicative of its significance.

The Alkaloids of Coffee

In addition to caffein, the main alkaloid of coffee, trigonellin — the methylbetaine of nicotinic acid — sometimes known as caffearine, has been isolated from coffee.[31] This alkaloid, having the formula $C_{14}H_{16}O_4N_2$, is also found in fenugreek, *Trigonella fœnum-græcum*, in various leguminous plants, and in the seeds of strophanthus. When pure it forms colorless needles melting at 140° C., and, as with all alkaloids, gives a weak basic reaction. It is very soluble in water, slightly soluble in alcohol, and only very slightly soluble in

[22] *Commercial Organic Analysis.*
[23] *Ann. Chem. Pharm.*, 1867 (vol. cxlii: p. 230).
[24] *Inaugural Diss.*, Munich. 1903.
[25] *Comptes Rendus*, 1897 (vol. cxxiv: p. 1458).
[26] *Dict. App. Chem.*, 1913 (vol. v: p. 393).
[27] U. S. Dept. Agr. Bur. Chem. *Bull.* 105, 1907. (p. 42).
[28] *Ann.* (vol. cccviii: pp. 327-348).
Ibid. (vol. ccclxxii: pp. 237, 246).
Arch. Pharm. (vol. ccxlvii: pp. 184-196).
[29] *Jour. Soc. Chem., Ind.*, 1910 (vol. xxix: p. 138).
[30] *Z. Nahr. Genussm.* (vol. xxi: p. 295).
[31] Paladino, *Gazetta*, 1895 (vol. xxv: no. 1: p. 104).
Forster & Riechelmann, *Zeitsch. öffent. Chem.*, 1897 (vol. iii: p. 129).
Polstorff, K. *Wallach-Festschrift*, 1909 (pp. 569-83).

ether, chloroform or benzol, so that it does not contaminate the caffein in the determination of the latter. Its effects on the body have not been studied, but they are probably not very great, as Polstorff obtained only 0.23 percent from the coffee which he examined.

Caffein, thein, trimethylxanthin, or $C_5H(CH_3)_3N_4O_2$, in addition to being in the coffee bean is also found in guarana leaves, the kola nut, maté, or Paraguay tea, and, in small quantities, in cocoa. It is also found in other parts of these plants besides those commonly used for food purposes.

A neat test for detecting the presence of caffein is that of A. Viehoever,[32] in which the caffein is sublimed directly from the plant tissue in a special apparatus. The presence of caffein in the sublimate is verified by observing its melting point, determined on a special heating stage used in connection with a microscope.

The chief commercial source of this alkaloid is waste and damaged tea, from which it is prepared by extraction with boiling water, the tannin precipitated from the solution with litharge, and the solution then concentrated to crystallize out the caffein. It is further purified by sublimation or recrystallization from water. Coffee chaff and roaster-flue dust have been proposed as sources for medicinal caffein, but the extraction of the alkaloid from the former has not proven to be a commercial success. Several manufacturers of pharmaceuticals are now extracting caffein from roaster-flue dust, probably by an adaptation of the Faunce[33] process. The recovery of caffein from roaster-flue gases may be facilitated and increased by the use of a condenser such as proposed Ewé.[34]

Pure caffein forms long, white, silky, flexible needles, which readily felt together to form light, fleecy masses. It melts at 235 - 7° C. and sublimes completely at 178° C., though the sublimation starts at 120°. Salts of an unstable nature are formed with caffein by most acids. The solubility of caffein as determined by Seidell[35] is given in Table I.

TABLE I — THE SOLUBILITY OF CAFFEIN

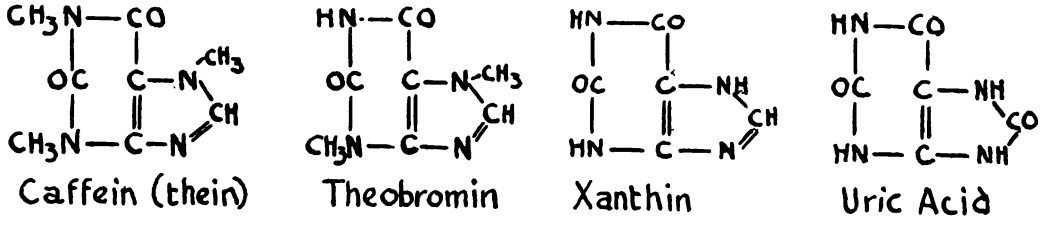
Solvent	Sp. Gr. of Solvent	Temperature of Solution	Solubility: Grm. Caffein per 100 Grm. of Saturated Solution	Sp. Gr. of Saturated Solution
Water	0.997	25	2.14	.....
Ether	0.716	25	0.27	.....
Chloroform	1.476	25	11.0	.....
Acetone	0.809	30-1	2.18	0.832
Benzene	0.872	30-1	1.22	0.875
Benzaldehyde	1.055	30-1	11.62	1.087
Amylacetate	0.860	30-1	0.72	0.862
Aniline	1.02	30-1	22.89	1.080
Amyl alcohol	0.814	25	0.49	0.810
Acetic acid	1.055	21.5	2.44	.....
Xylene	0.847	32.5	1.11	0.847
Toluene	0.862	25	0.57	0.861

The similarity between caffein and theobromin (the chief alkaloid of cocoa), xanthin (one of the constituents of meat), and uric acid, is shown by the accompanying structural formulæ.

These formulæ show merely the relative position occupied by caffein in the purin group, and do not in any wise indicate, because of its similarity of structure to the other compounds, that it has the same physiological action. The presence and position of the methyl groups (CH_3) in caffein is probably the controlling factor which makes its action differ from the behavior of other members of the series. The structure of these compounds was established, and their syntheses accomplished, in the course of various classic researches by Emil Fischer.[36]

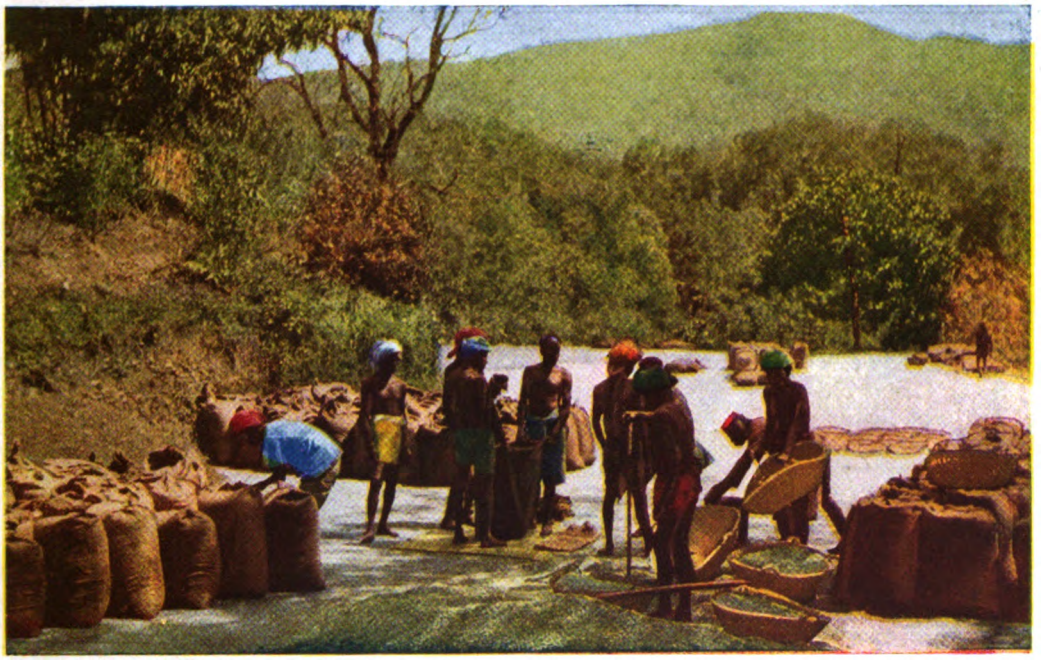
Gorter states that caffein exists in coffee in combination with chlorogenic acid as a potassium chlorogenate, $C_{32}H_{36}O_{19}$, $K_2(C_8H_{10}O_2N_4)_2.2H_2O$, which he isolated in colorless prisms. This compound is water-soluble, but caffein can not be extracted from the crystals with anhydrous

[32] Private communication.
[33] U. S. Pat., 716,878, Dec. 30, 1902.
[34] *Tea & Coffee Trade Jour.*, 1920 (vol. xxxviii: pp. 321-22).
[35] *Jour. Amer. Chem. Soc.*, 1907 (vol. xxix: p. 1091).
[36] *Ber.*, 1895 (vol. xxviii: p. 3137); 1899 (vol. xxxii: p. 435); 1900 (vol. xxxiii: p. 3035).



FORMULA FOR CAFFEIN, SHOWING ITS RELATION TO THE PURIN GROUP

PLANTER'S BUNGALOW WITH COFFEE TREES IN FLOWER, MYSORE



COOLIES BAGGING COFFEE ON THE DRYING GROUNDS

COFFEE SCENES IN BRITISH INDIA

TABLE II — COFFEE ANALYSES

	Santos Green	Santos Roasted	Padang Green	Padang Roasted	Guatemala Green	Guatemala Roasted	Mocha Green	Mocha Roasted
Moisture April 20th	8.75	3.75	8.78	2.72	9.59	3.40	9.06	3.36
Moisture September 20th	8.12	6.45	8.05	6.03	8.68	6.92	8.15	7.10
Ash	4.41	4.49	4.23	4.70	3.93	4.48	4.20	4.43
Oil	12.96	13.76	12.28	13.33	12.42	13.07	14.04	14.18
Caffein	1.87	1.81	1.56	1.47	1.26	1.22	1.81	1.28
Caffein, dry basis	2.03	.....	1.69	.....	1.39	.....	1.44	.....
Crude fiber	20.70	14.75	21.92	14.95	22.23	15.23	22.46	15.41
Protein	9.50	12.93	12.62	14.75	10.43	11.69	8.56	9.57
Protein, dry basis	10.41	.....	13.68	.....	11.53	.....	9.41	.....
Water extract	31.11	30.30	30.83	30.21	31.04	30.47	31.27	60.44
Specific gravity, 10 p.rcent extract	1.0109	1.0101	1.0107	1.0104	1.0105	1.0104	1.0108	1.0108
Bushelweight	47.0	28.2	45.2	27.8	52.2	27.2	48.8	30.2
1,000 kernel weight	130.60	120.20	167.30	151.35	189.20	165.80	119.52	100.00
1,000 kernel weight, dry basis	119.1	115.7	154.1	147.2	171.0	160.1	108.6	96.6
Dextrose	.....	0.72	.....	0.81	.....	0.54	.....	0.46
Caffetannic acid	15.58	17.44	15.37	16.93	16.27	17.13	15.61	16.89
Acidity by titration appar.nt	1.50	2.08	1.47	2.00	1.39	2.13	1.11	1.87

solvents. To this behavior can probably be attributed the difficulty experienced in extracting caffein from coffee with dry organic solvents. However, the fact that a small percentage can be extracted from the green bean in this manner indicates that some of the caffein content exists therein in a free state. This acid compound of caffein will be largely decomposed during the process of torrefaction, so that in roasted coffee a larger percentage will be present in the free state. Microscopical examination of the roasted bean lends verisimilitude to this contention.

As may be seen in Table II,[37] the caffein content of coffee varies with the different kinds, a fair average of the caffein content being about 1.5 percent for *C. arabica,* to which class most of our coffees belong. However, aside from these may be mentioned *C. canephora,* which yields 1.97 percent caffein; *C. mauritiana,* which contains 0.07 percent of the alkaloid (less than the average "caffein-free coffee"); and *C. humboltiana,* which contains no caffein, but a bitter principle, cafemarin. Neither do the berries of *C. Gallienii, C. Bonnieri,* or *C. Mogeneti* contain any caffein; and there has also been reported[38] a "Congo coffee" which contained no crystallizable alkaloid whatever.

Apparently the variation in caffein content is largely due to the genus of the tree from which the berry comes, but it is also quite probable that the nature of the soil and climatic conditions play an important part. In the light of what has been accomplished in the field of agricultural research, it does not seem improbable that a man of Burbank's ability and foresight could successfully develop a series of coffees possessed of all the cup qualities inherent in those now used, but totally devoid of caffein. Whether this is desirable or not is a question to be considered in an entirely different light from the possibility of its accomplishment.

[37] Willcox & Rentschler. *Tea & Coffee Trade Jour.,* 1910 (vol. xix: p. 440).

[38] Fricke, E. *Zeits. f. angew. Chemie.,* 1889 (pp. 121-122).

TABLE III — CAFFEIN IN DIFFERENT ROASTS

	Rio	Santos	Guatemala
Green	1.68%	1.85%	1.82%
Cinnamon	1.70	1.72	1.80
Medium	1.66	1.66	1.56
City	1.36	1.66	1.46

The variation in the caffein content of coffee at different intensities of roasting, as shown in Table III[39] is, of course, primarily dependent upon the original content of the green. A considerable portion of the caffein is sublimed off during roasting, thus decreasing the amount in the bean. The higher the roast is carried, the greater the shrinkage; but, as the analyses in the above table show, the loss of caffein proceeds out of proportion to the shrinkage, for the percentage of caffein constantly decreases with the increase in color. If the roast be carried almost to the point of carbonization, as in the case of the "Italian roast," the caffein content will be almost nil. This is not a suitable coffee for one desiring an almost caffein-free drink, for the empyreumatic products produced by this excessive roasting will be more toxic by far than the caffein itself would have been.

Caffein-free Coffee

The demand for a caffein-free coffee may be attributed to two causes, namely: the objectionable effect which caffein has upon neurasthenics; and the questionable advertising of the "coffee-substitute" dealers, who have by this means persuaded many normal persons into believing that they are decidedly sub-normal. As a result of this demand, a variety of decaffeinated coffees

[39] Willcox & Rentschler. *Tea & Coffee Trade Jour.,* 1911 (vol. xx: p. 355).

have been placed on the market. Just why the coffee men have not taken advantage of naturally caffein-free coffees, or of the possibility of obtaining coffees low in caffein content by chemical selection from the lines now used, is a difficult question to answer.

In the endeavor to develop a commercial decaffeinated coffee the first method of procedure was to extract the caffein from roasted coffee. This method had its advantages and its disadvantages, of which the latter predominated. The caffein in the roasted coffee is not as tightly bound chemically as in the green coffee, and is, therefore, more easily extracted. Also, the structure of the roasted bean renders it more readily penetrable by solvents than does that of the green bean. However, the great objection to this method arises from the fact that at the same time as the caffein is extracted, the volatile aromatic and flavoring constituents of the coffee are removed also. These substances, which are essential for the maintenance of quality by the coffee, though readily separated from the caffein, can not be returned to the roasted bean with any degree of certainty. This virtually insurmountable obstacle forced the abandonment of this mode of attack.

In order to avoid this action, the attention of investigators was directed to extraction of the alkaloid in question from the green bean. Because of the difficulty of causing the solvent to penetrate the bean, recourse to grinding resulted. This greatly facilitated the desired extraction, but a difficulty was encountered when the subsequent roasting was attempted. The irregular and broken character of the ground green beans resisted all attempts to produce practically a uniformly roasted, highly aromatic product from the ground material.

Avoidance of this lack of uniformity in the product, and the great desirability to duplicate the normal bean as far as possible, necessitated the development of a method of extraction of the caffein from the whole raw bean without a permanent alteration of the shape thereof. The close structure of the green bean, and its consequent resistance to penetration by solvents, and the existence of the caffein in the bean as an acid salt, which is not easily soluble, offered resistance to successful extraction.

As a means of overcoming the difficulty of structure, the beans were allowed to stand in water in order to swell, or the cells were expanded by treatment with steam, or the beans were subjected to the action of some "cellulose-softening acids," such as acetic acid or sulphur dioxid. As a method of facilitating the mechanical side of extraction without deleterious effects, the treatment of the coffee with steam under pressure, as utilized in the patented process of Myer, Roselius, and Wimmer,[40] is probably the safest.

Many ingenious methods have been devised for the ready removal of the caffein from this point on. Several processes employ an alkali, such as ammonium hydroxid, to free the caffein from the acid; or an acid, such as acetic, hydrochloric, or sulphurous, is used to form a more soluble salt of caffein. Other procedures effect the dissociation of the caffein-acid salt by dampening or immersion in a liquid and subjecting the mass to the action of an electric current.

The caffein is usually extracted from the beans by benzol or chloroform, but a variety of solvents may be employed, such as petrolic ether, water, alcohol, carbon tetrachlorid, ethylene chlorid, acetone, ethyl ether, or mixtures or emulsions of these. After extraction, the beans may be steam distilled to remove and to recover any residual traces of solvent, and then dried and roasted. It is said[41] that by heating the beans before bringing them into contact with steam, not only is an economy of steam effected, but the quality of the resultant product is improved.

One clever but expensive method[42] of preparing caffein-free coffee consists in heating the beans under pressure, with some substance, such as sodium salicylate, with the resultant formation of a more soluble and more easily steam-distillable compound of caffein. The beans are then steam distilled to remove the caffein, dried, and roasted.

Another process of peculiar interest is that of Hubner,[43] in which the coffee beans are well washed and then spread in layers and kept covered with water at 15° C. until limited germination has taken place, whereupon the beans are removed and the caffein extracted with water at 50° C. It is claimed by the inventor that sprouting serves to remove some of the caffein, but it is quite probable that the process does noth-

[40] U. S. Pat., 897,840, Sept. 1, 1908.
[41] British Pat., 144,988, March 19, 1920.
[42] French Pat., 412,550, Feb. 12, 1910.
[43] U. S. Pat., 947,577, Jan. 25, 1910.

ing more than accomplish simple aqueous extraction.

In the majority of these processes the flavor of the resultant product should be very similar to natural roasted coffee. However, in the cases where aqueous extraction is employed, other substances besides caffein are removed that are replaced in the bean only with difficulty. The resultant product accordingly is very likely to have a flavor not entirely natural. On the other hand, beans from which the caffein is extracted with volatile solvents, if the operation be conducted carefully, should give a natural-tasting roast. Any residual traces of the solvent left in the bean are volatilized upon roasting.

Some of the caffein-free coffees on the market show upon analysis almost as much caffein as the natural bean. Those manufactured by reliable concerns, however, are virtually caffein-free, their content of the alkaloid varying from 0.3 to 0.07 percent as opposed to 1.5 percent in the untreated coffee. Thus, although actually only caffein-poor, in order to get the reaction of one cup of ordinary coffee one would have to drink an unusual amount of the brew made from these coffees.

The Aromatic Principles of Coffee

To ascertain just what substance or substances give the pleasing and characteristic aroma to coffee has long been the great desire of both practical and scientific men interested in the coffee business. This elusive material has been variously called caffeol, caffeone, "the essential oil of coffee," etc., the terms having acquired an ambiguous and incorrect significance. It is now generally agreed that the aromatic constituent of coffee is not an essential oil, but a complex of compounds which usage has caused to be collectively called "caffeol."

These substances are not present in the green bean, but are produced during the process of roasting. Attempts at identification and location of origin have been numerous; and although not conclusive, still have not proven entirely futile. One of the first observations along this line was that of Benjamin Thompson in 1812. "This fragrance of coffee is certainly owing to the escape of a volatile aromatic substance which did not originally exist as such in the grain, but which is formed in the process of roasting it." Later, Graham, Stenhouse, and Campbell started on the way to the identification of this aroma by noting that "in common with all the valuable constituents of coffee, caffeone is found to come from the soluble portion of the roasted seed."[44]

Comparison of the aroma given off by coffee during the roasting process with that of fresh-ground roasted coffee shows that the two aromas, although somewhat different, may be attributed to the same substances present in different proportions in the two cases. Recovery and identification of the aromatic principles escaping from the roaster would go far toward answering the question regarding the nature of the aroma. Bernheimer[45] reported water, caffein, caffeol, acetic acid, quinol, methylamin, acetone, fatty acids and pyrrol in the distillate coming from roasting coffee. The caffeol obtained by Bernheimer in this work was believed by him to be a methyl derivative of saligenin. Jaeckle[46] examined a similar product and found considerable quantities of caffein, furfurol, and acetic acid, together with small amounts of acetone, ammonia, trimethylamin, and formic acid. The caffeol of Bernheimer could not be detected. Another substance was separated also, but in too small a quantity to permit complete identification. This substance consisted of colorless crystals, which readily sublimed, melted at 115° to 117° C., and contained sulphur. The crystals were insoluble in water, almost insoluble in alcohol, but readily soluble in ether.

By distilling roasted coffee with superheated steam, Erdmann[47] obtained an oil consisting of an indifferent portion of 58 percent and an acid portion of 42 percent, consisting mainly of a valeric acid, probably alphamethylbutyric acid. The indifferent portion was found to contain about 50 percent furfuryl alcohol, together with a number of phenols. The fraction containing the characteristic odorous constituent of coffee boiled at 93° C. under 13 mm. pressure. The yield of this latter principle was extremely small, only about 0.89 gram being procured from 65 kilos of coffee.

Pyridin was also shown to be present in coffee by Betrand and Weisweiller[48] and by Sayre.[49] As high as 200 to 500 milligrams

[44] *Jour. Chem. Soc.*, 1857 (vol. ix: p. 34).
[45] *Wien. Akad. Ber.* (2 *Abth.*) (vol. lxxxi: pp. 1032-1043).
Monatsh. f. Chem., 1880 (vol. 1: p. 456).
[46] *Zeits. f. Untersuch. d. Nahr. u. Genussm.*, 1898 (vol. vii: pp. 457-472)
[47] *Ber.*, 1901 (vol. xxxv: pp. 1846-1854).
[48] *Compt. rend.* (vol. clvii: pp. 212-13).
[49] *Bull. Pharm.*, 1916 (vol. xxx: pp. 276-78).

of this toxic compound have been obtained from 1 kilogram of freshly roasted coffee.

As stated above, the empyreumatic volatile aromatic constituents of the coffee are without question formed during and by the roasting process. According to Thorpe,[50] the most favorable temperature for development of coffee odor and flavor is about 200° C. Erdmann claimed to have produced caffeol by gently heating together caffetannic acid, caffein, and cane sugar. Other investigators have been unable to duplicate this work. Another authority,[51] giving it the empirical formula $C_8H_{10}O_2$, states that it is produced during roasting, probably at the expense of a portion of the caffein. These conceptions are in the main incomplete and inaccurate.

By means of careful work, Grafe[52] came closer to ascertaining the origin of the fugacious aromatic materials. His work with normal, caffein-free coffee and with Thum's purified coffee led him to state that a part of these substances was derived from the crude fiber, probably from the hemi-cellulose of the thick endosperm cells. Sayre[49] makes the most plausible proposal regarding the origin of caffeol. He considers the roasting of coffee as a destructive distillation process, summarizing the results, briefly, as the production of furfuraldehyde from the carbohydrates, acrolein from the fats, catechol and pyrogallol from the tannins, and ammonia, amins, and pyrrols from the proteins. The products of roasting inter-react to produce many compounds of varying degrees of complexity and toxicity.

The great difficulty which arises in the attempt to identify the aromatic constituents of coffee is that the caffeols of no two coffees may be said to be the same. The reason for this is apparent; for the green coffees themselves vary in composition, and those of the same constitution are not roasted under identical conditions. Therefore, it is not to be expected that the decomposition products formed by the action of the different greens would be the same. Also, these volatile products occur in the roasted coffee in such a small amount that the ascertaining of their percentage relationship and the recognition of all that are present are not possible with the methods of analysis at present at our disposal. Until better analytical procedures have been developed we can not hope to establish a chemical basis for the grading of coffees from this standpoint.

Coffee Oil and Fat

It is well to distinguish between the "coffee oils," as they are termed by the trade, and true coffee oil. In speaking of the qualities of coffee, connoisseurs frequently use erroneous terms, particularly when they designate certain of the flavoring and aromatic constituents of coffee as "oils" or "essential oils." Coffee does not contain any essential oils, the aromatic constituent corresponding to essential oil in coffee being caffeol, a complex which is water-soluble, a property not possessed by any true oil. True, the oil when isolated from roasted coffee does possess, before purification, considerable of the aromatic and flavoring constituents of coffee. They are, however, no part of the coffee fat, but are held in it no doubt by an enfleurage action in much the same way that perfumes of roses, etc., are absorbed and retained by fats and oils in the commercial preparation of pomades and perfumes. This affinity of the coffee oil for caffeol assists in the retention of aromatic substances by the whole roasted bean. However, upon extraction of ground roasted coffee with water, the caffeol shows a preferential solubility in water, and is dissolved out from the oil, going into the brew.

The true oil of coffee has been investigated to a fair degree and has been found to be inodorous when purified. Analysis of green and roasted coffees shows them to possess between 12 percent and 20 percent fat. Warnier[53] extracted ground unroasted coffee with petroleum ether, washed the extract with water, and distilled off the solvent, obtaining a yellow-brownish oil possessing a sharp taste. From his examination of this oil he reported these constants: d_{24-5}, 0.942; refraction at 25°, 81.5; solidifying point, 6° to 5°; melting point, 8° to 9°; saponification number, 177.5; esterification number, 166.7; acid number, 6.2; acetyl number, 0; iodin number, 84.5 to 86.3. Meyer and Eckert[54] carefully purified coffee oil and saponified it with Li_2O in alcohol. In the saponifiable portion, glycerol was the only alcohol present, the acids being carnaubic, 10 percent; daturinic acid, 1 to 1.5 percent; palmitic

[50] *Dict. App. Chem.*, 1913 (vol. II: p. 99).
[51] *U. S. Dispensatory, 19th Ed.*, 1907 (p. 145).
[52] *Monatsh. f. Chem.* (vol. xxxiii: pp. 1389-1406).
[53] *Apoth.-Ztg.* (vol. xxii: pp. 919-20).
Pharm. Weekbl., 1907 (vol. xxxvii).
[54] *Monatsh. f. Chem.* (vol. xxxi: p. 1227).

acid, 25 to 28 percent; capric acid, 0.5 percent; oleic acid, 2 percent, and linoleic acid, 50 percent. The unsaponifiable wax amounted to 21.2 percent, was nitrogen-free, gave a phytostearin reaction, and saponification and oxidation indicated that it was probably a tannol carnaubate. Von-Bitto[55] examined the fat extracted from the inner husk of the coffee berry and found it to be faint yellow in color, and to solidify only gradually after melting. Upon analysis, it showed: saponification value, 141.2; palmitic acid, 37.84 percent, and glycerids as tripalmitin, 28.03 percent.

Carbohydrates of the Coffee Berry

There has been considerable diversity of opinion regarding the sugar of coffee. Bell believed the sugar to be of a peculiar species allied to melezitose, but Ewell,[56] G. L. Spencer, and others definitely proved the presence of sucrose in coffee. In fat-free coffee 6 percent of sucrose was found extractable by 70 percent alcohol. Baker[57] claimed that manno-arabinose, or manno-xylose, formed one of the most important constituents of the coffee-berry substance and yielded mannose on hydrolysis. Schultze and Maxwell state that raw coffee contains galactan, mannan, and pentosans, the latter present to the extent of 5 percent in raw and 3 percent in roasted coffee. By distilling coffee with hydrochloric acid Ewell obtained furfurol equivalent to 9 percent pentose. He also obtained a gummy substance which, on hydrolysis, gave rise to a reducing sugar; and as it gave mucic acid and furfurol on oxidation, he concluded that it was a compound of pentose and galactose. In undressed Mysore coffee Commaille[58] found 2.6 percent of glucose and no dextrin. This claim of the presence of glucose in coffee was substantiated by the work of Hlasiwetz,[59] who resolved a caffetannic acid, which he had isolated, into glucose and a peculiar crystallizable acid, $C_8H_8O_4$, which he named caffeic acid.

The starch content of coffee is very low. Cereals may readily be detected and identified in coffee mixtures by the presence and characteristics of their starch, in view of the fact that coffee (chicory, too) is practically free from starch. On this score it is inadvisable for diabetics to use any of the many cereal substitutes for coffee. It is pertinent to note in this connection that persons suffering from diabetes may sweeten their coffee with saccharin (½ to 1 grain per cup) or glycerol, thus obtaining perfect satisfaction without endangering their health.

The cellulose in coffee is of a very hard and horny character in the green bean, but it is made softer and more brittle during the process of roasting. It is rather difficult to define under the microscope, particularly after roasting, even though the chief characteristics of the cellular tissue are more or less retained. Coffee cellulose gives a blue color with sulphuric acid and iodin, and is dissolved by an ammoniacal solution of copper oxid. Even after roasting, remnants of the silver skin are always present, the structure of which, a thin membrane with adherent, thick-walled, spindle-shaped, hollow cells, is peculiar to coffee.

The Chemistry of Roasting

The effect of the heat in the roasting of coffee is largely evidenced as a destructive distillation and also as a partial dehydration. At the same time, oxidizing and reducing reactions probably occur within the bean, as well as some polymerization and inter-reactions.

A loss of water is to be expected as the natural outcome of the application of heat; and analyses show that the moisture content of raw coffee varies from 8 to 14 percent, while after roasting it rarely exceeds 3 percent, and frequently falls as low as 0.5 percent. The loss of the original water content of the green bean is not the only moisture loss; for many of the constituents of coffee, notably the carbohydrates, are decomposed upon heating to give off water, so that analysis before and after roasting is no direct indication of the exact amount of water driven off in the process. If it be desired to ascertain this quantity accurately, catching of the products which are driven off and determination of their water content becomes necessary.

The carbohydrates both dehydrate and decompose. The result of the dehydration is the formation of caramel and related products, which comprise the principal coloring matters in coffee infusion. That portion of the carbohydrates known as pentosans gives rise to furfuraldehyde, one of the important components of caffeol.

The effect of roasting upon the fat content of the beans is to reduce its actual

[55] *Jour. Landw.*, 1904 (vol. lii: p. 93).
[56] *Amer. Chem. Jour.*, 1892 (vol. xiv: p. 473).
[57] *Analyst*, 1902 (vol. xxvi: p. 116).
[58] *Mon. Sci.* (vol. iii: no. 6: p. 779).
[59] *J. P. C.*, 1867 (p. 307).

weight, but not to change appreciably the percentage present, since the decrease in quantity keeps pace fairly well with the shrinkage. Some of the more volatile fatty acids are driven off, and the fats break down to give a larger percentage of free fatty acids, some light esters, acrolein, and formic acid. If the roast be a very heavy one, or is brought up too rapidly, the fat will come to the surface, through breaking of the fat cells, with a decided alteration in the chemical nature of the fat and with pronounced expansion and cracking.

Decomposition of the caffein acid-salt and considerable sublimation of the caffein also occur. The majority of the caffein undergoes this volatilization unchanged, but a portion of it is probably oxidized with the formation of ammonia, methylamin, dimethylparabanic acid, and carbon dioxid. This reaction partly explains why the amount of caffein recovered from the roaster flues is not commensurate with the amount lost from the roasting coffee; although incomplete condensation is also an important factor. Microscopic examination of the roasted beans will show occasional small crystals of caffein in the indentations on the surface, where they have been deposited during the cooling process.

The compound, or compounds, known as "caffetannic acid" are probably the source of catechol, as the proteins are of ammonia, amins, and pyrrols. The crude fiber and other unnamed constituents of the raw beans react analogously to similar compounds in the destructive distillation of wood, giving rise to acetone, various fatty acids, carbon dioxid and other uncondensable gases, and many compounds of unknown identity.

During the course of roasting and subsequent cooling these decomposition products probably interact and polymerize to form aromatic tar-like materials and other complexes which play an important rôle among the delicate flavors of coffee. In fact, it is not unlikely that these reactions continue throughout the storage time after roasting, and that upon them the deterioration of roasted coffee is largely dependent. Speculation upon what complex compounds are thus formed offers much attraction. A notable one by Sayre[60] postulates the reaction between acrolein and ammonia to give methyl pyridin, which in turn with furfurol forms furfurol vinyl pyridin. This upon reduction would produce the alkaloid, conin, traces of which have been found in coffee.

Although furfuraldehyde is the natural decomposition product of pentosans, furfuryl alcohol is the main furane body of coffee aroma. This would indicate that active reducing conditions prevail within the bean during roasting; and the further fact that carbon monoxid is given off during roasting makes this seem quite probable. If one admits that caffetannic acid exists in the green bean; that upon oxidation it gives viridic acid; and that it is concentrated in the outer layers of the bean, as certain investigators have claimed, then there is chemical proof of the existence of oxidizing conditions about the exterior of the bean. In any event, however, the fact that oxidizing conditions predominate on the external portion of the bean is obvious. Accordingly, our meager knowledge of the chemistry of roasting indicates that while the external layers of the roasting beans are subjected to oxidizing conditions, reducing ones exist in the interior. Future experimentation will, no doubt, prove this to be the case.

Attempts have been made to retain in the beans the volatile products, which normally escape, both by coating previous to roasting[61] and by conducting the process under pressure.[62] However, the results so obtained were not practical, since the cup values were decreased in the majority of cases, and the physiological effects produced were undesirable. In cases where the quality was improved, the gain was not sufficient to recompense the roaster for the additional expense and difficulty of operation.

Various persons have essayed to control the roasting process automatically; but the extreme variance in composition of different coffees, the effect of changing atmospheric conditions, and the lack of constancy in the calorific power of fuels have conspired to defeat the automatic roasting machine.[63] It is even doubtful whether De Mattia's[64] process for roasting until the vapors evolved produce a violet color when passed into a solution of fuchsin decolorized with sulphur dioxid is commercially reliable.

[60] *Trans. Kansas Acad. Sci.*, 1918 (vol. xxviii: pp. 136-141).

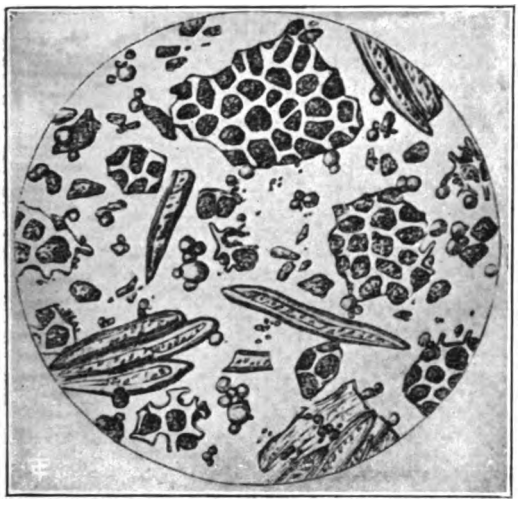
[61] Feitler, S.: Eng. Pat., 19,845, Aug. 28, 1897.

[62] U. S. Pat., 33,453, Oct. 8, 1861.
U. S. Pat., 75,829, March 24, 1868.
U. S. Pat., 701,750, June 3, 1902.

[63] U. S. Pat., 943, 238, Dec. 14, 1909.

[64] U. S. Pat., 703,508, July 1, 1902.
U. S. Pat., 865,203, Sept. 3, 1907.

Many patents have been granted for the treatment of coffees immediately prior to or during roasting with the object of thus improving the product. The majority of these depend upon adding solutions of sugar,[65] calcium saccharate,[66] or other carbohydrates,[67] and in the case of Eckhardt,[68] of small percentages of tannic acid and fat. In direct opposition to this latter practise, Jurgens and Westphal[69] apply alkali, ostensibly to lessen the "tannic acid" con-



GROUND COFFEE UNDER THE MICROSCOPE

tent. Brougier[70] sprays a solution containing caffein upon the roasting berries; and Potter[71] roasts the coffee together with chicory, effecting a separation at the end.

The exact effect which roasting with sugars has upon the flavor is not well understood; but it is known that it causes the beans to absorb more moisture, due to the hygroscopicity of the caramel formed. For instance, berries roasted with the addition of glucose syrup hold an additional 7 percent of water and give a darker infusion than normally roasted coffee. When the green coffee is glazed with cane sugar prior to roasting, the losses during the process are much higher than ordinarily, on account of the higher temperature required to attain the desired results. Losses for ordinary coffee taken to a 16-percent roast are 9.7 percent of the original fat and 21.1 percent of the original caffein; while for "sugar glazed" coffee the losses were 18.3 percent of the original fat and 44.3 percent of the original caffein, using 8 to 9 percent sugar with Java coffee.

Grinding and Packaging

It is a curious fact that green coffee improves upon aging, whereas after roasting it deteriorates with time. Even when packed in the best containers, age shows to a disadvantage on the roasted bean. This is due to a number of causes, among which are oxidation, volatilization of the aroma, absorption of moisture and consequent hydrolysis, and alteration in the character of the aromatic principles. Doolittle and Wright[72] in the course of some extensive experiments found that roasted coffee showed a continual gain in weight throughout 60 weeks, this gain being mostly due to moisture absorption. An investigation by Gould[73] also demonstrated that roasted coffee gives off carbon dioxid and carbon monoxid upon standing. The latter, apparently produced during roasting and retained by the cellular structure of the bean, diffuses therefrom; whereas the former comes from an ante-roasting decomposition of unstable compounds present.[74]

The surface of the whole bean forms a natural protection against atmospheric influences, and as soon as this is broken, deterioration sets in. On this account, coffee should be ground immediately before extraction if maximum efficiency is to be obtained. The cells of the beans tend to retain the fugacious aromatic principles to a certain extent; so that the more of these which are broken in grinding, the greater will be the initial loss and the more rapid the vitiation of the coffee. It might, therefore, seem desirable to grind coarsely in order to avoid this as much as possible. However, the coarser the grind, the slower and more incomplete will be the extraction. A patent[75] has been granted for a grind which contains about 90 percent fine coffee and 10 percent coarse, the patentee's claim being that in his "irregular grind" the coarse coffee retains enough of the volatile constituents to flavor the beverage, while the fine coffee gives a very high extraction,

[65] Winter, H.: U. S. Pat., 997,431. Aug. 28, 1897.
[66] Simon, M., Jr.: Ger. Pat., 253,419. Feb. 19, 1911.
[67] Von Niessen: British Pat., 7,427, Mar. 24, 1910.
[68] Eng. Pat., 5,776, Mar. 19, 1895.
[69] U. S. Pat., 832,322.
[70] Eng. Pat., 8,270, April 24, 1893.
[71] U. S. Pat., 994,785, June 13, 1911.

[72] *Am. J. Pharm.*, 1915 (vol. lxxxvii: pp. 524-26).
[73] *Orig. Com. 8th Intern. Cong. Appl. Chem.* (*Appen*) (vol. xxvi: p. 389)
[74] *Tea & Coffee Trade Jour.*, 1920 (vol. xxxix: pp. 318-19).
[75] King, J. E.: U. S. Pat. 1,263,434.

thus giving an efficient brew without sacrificing individuality.

In packaging roasted coffee the whole bean is naturally the best form to employ, but if the coffee is ground first, King[16] found that deterioration is most rapid with the coarse ground coffee, the speed decreasing with the size of the ground particles. He explains this on the ground of "ventilation" — the finer the grind, the closer the particles pack together, the less the circulation of air through the mass, and the smaller the amount of aroma which is carried away. He also found that glass makes the best container for coffee, with the tin can, and the foil-lined bag with an inner lining of glassine, not greatly inferior.

Considerable publicity has been given recently to the method of packing coffee in a sealed tin under reduced pressure. While thus packing in a partial vacuum undoubtedly retards oxidation and precludes escape of aroma from the original package, it would seem likely to hasten the initial volatilizing of the aroma. Also, it would appear from Gould's[17] work that roasted coffee evolves carbon dioxid until a certain positive pressure is attained, regardless of the initial pressure in the container. Accordingly, vacuum-packing apparently enhances decomposition of certain constituents of coffee. Whether this result is beneficial or otherwise is not quite clear.

Brewing

The old-time boiling method of making coffee has gone out of style, because the average consumer is becoming aware of the fact that it does not give a drink of maximum efficiency. Boiling the ground coffee with water results in a large loss of aromatic principles by steam distillation, a partial hydrolysis of insoluble portions of the grounds, and a subsequent extraction of the products thus formed, which give a bitter flavor to the beverage. Also, the maintenance of a high temperature by the direct application of heat has a deleterious effect upon the substances in solution. This is also true in the case of the pumping percolator, and any other device wherein the solution is caused to pass directly into steam at the point where heat is applied. Warm and cold water extract about the same amount of material from coffee; but with different rates of speed, an increase in temperature decreasing the time necessary to effect the desired result.

It is a well known fact that rewarming a coffee brew has an undesirable effect upon it. This is very probably due to the precipitation of some of the water-soluble proteins when the solution cools, and their subsequent decomposition when heat is applied directly to them in reheating the solution. The absorption of air by the solution upon cooling, with attendant oxidation, which is accentuated by the application of heat in rewarming, must also be considered. It is likewise probable that when an extract of coffee cools upon standing, some of the aromatic principles separate out and are lost by volatilization.

The method of extracting coffee which gives the most satisfaction is practised by using a grind just coarse enough to retain the individualistic flavoring components, retaining the ground coffee in a fine cloth bag, as in the urn system, or on a filter paper, as in the Tricolator, and pouring water at boiling temperature over the coffee. During the extraction, a top should be kept on the device to minimize volatilization, and the temperature of the extract should be maintained constant at about 200° F. after being made. Whether a repouring is necessary or not is dependent upon the speed with which the water passes through the coffee, which in turn is controlled by the fineness of the grind and of the filtering medium.

The Water Extract

Although many analyses of the whole coffee bean are available, but little work has been reported upon the aqueous extracts. The total water extract of roasted coffee varies from 20 to 31 percent in different kinds of coffee. The following analysis of the extract from a Santos coffee may be taken as a fair average example of the water-soluble material.[18]

TABLE IV — ANALYSIS OF SANTOS COFFEE EXTRACT (DRY BASIS)

Ether extract, fixed	1.06%
Total nitrogen	3.40%
Caffein	5.42%
Crude fiber	0.25%
Total ash	17.43%
Reducing sugar	2.70%
Caffetannic acid	15.33%
Protein	7.71%

It is difficult to make the trade terms, such as acidity, astringency, etc., used in describing a cup of coffee, conform with the

[16] *Tea & Coffee Trade Jour.*, 1917 (vol. xxxiii: pp. 552-55).
[17] *Loc. cit.* (see 73).
[18] *Tea & Coffee Trade Jour.*, 1911 (vol. xx: p. 34).

chemical meanings of the same terms. However, a fair explanation of the cause of some of these qualities can be made. Careful work by Warnier[79] showed the actual acidities of some East India coffees to be:

TABLE V — ACIDITY OF SOME EAST INDIA COFFEES

Coffee from	Acid Content
Sindjai	0.033%
Timor	0.028%
Bauthain	0.019%
Boengei	0.016%
Loewae	0.021%
Waloe Pengenten	0.018%
Kawi Redjo	0.015%
Palman Tjiasem	0.022%
Malang	0.013%

These figures may be taken as reliable examples of the true acid content of coffee; and though they seem very low, it is not at all incomprehensible that the acids which they indicate produce the acidity in a cup of coffee. They probably are mainly volatile organic acids, together with other acidic-natured products of roasting. We know that very small quantities of acids are readily detected in fruit juices and beer, and that variation in their percentage is quickly noticed, while the neutralization of this small amount of acidity leaves an insipid drink. Hence, it seems quite likely that this small acid content gives to the coffee brew its essential acidity. A few minor experiments on neutralization have proven that a very insipid beverage is produced by thus treating a coffee infusion.

The body, or what might be called the licorice-like character, of coffee, is due conceivably to the presence of bodies of a glucosidic nature and to caramel. Astringency, or bitterness, is dependent upon the decomposition products of crude fiber and chlorogenic acid, and upon the soluble mineral content of the bean. The degree to which a coffee is sweet-tasting or not is, of course, dependent upon its other characteristics, but probably varies with the reducing sugar content. Aside from the effects of these constituents upon cup quality, the influence of volatile aromatic and flavoring constituents is always evident in the cup valuation, and introduces a controlling factor in the production of an individualistic drink.

Coffee Extracts

The uncertainty of the quality of coffee brews as made from day to day, the inconvenience to the housewife of conducting the extraction, and the inevitable trend of the human race toward labor-saving devices, have combined their influences to produce a demand for a substance which will give a good cup of coffee when added to water. This gave rise to a number of concentrated liquid and solid "extracts of coffee," which, because of their general poor quality, soon brought this type of product into disrepute. This is not surprising; for these preparations were mainly mixtures of caramel and carelessly prepared extracts of chicory, roasted cereals, and cheap coffee.

Liquid extracts of coffee galore have appeared on the market only soon to disappear. Difficulty is experienced in having them maintain their quality over a protracted period of time, primarily due to the hydrolyzing action of water on the dissolved substances. They also ferment readily, although a small percentage of preservative, such as benzoate of soda, will halt spoilage.[80]

So much trouble is not encountered with coffee-extract powders — the so-called "soluble" or "instant" coffees. The majority of these powdered dry extracts do, however, show great affinity for atmospheric moisture. Their hygroscopicity necessitates packing and keeping them in air-tight containers to prevent them running into a solid, slowly soluble mass.

The general method of procedure employed in the preparation of these powders is to extract ground roasted coffee with water, and to evaporate the aqueous solution to dryness with great care. The major difficulty which seems to arise is that the heat needed to effect evaporation changes the character of the soluble material, at the same time driving off some volatile constituents which are essential to a natural flavor. Many complex and clever processes have been developed for avoiding these difficulties, and quite a number of patents on processes, and several on the resultant product, have been allowed; but the commercial production of a soluble coffee of freshly-brewed-coffee-duplicating-power is yet to be accomplished. However, there are now on the market several coffee-extract powders which dissolve readily in water, giving quite a fair approximation of freshly brewed coffee. The improvement shown

[79] *Pharm. Weekbl. voor Nederl.*, 1899 (no. 13). *Apoth. Ztg.*, 1899 (p. 14).

[80] *Jour. Assoc. Off. Agri. Chem.*, 1920 (vol. iii: p. 501).

since they first appeared augurs well for the eventual attainment of their ultimate goal.

Adulterants and Substitutes

There would appear to be three reasons why substitutes for coffee are sought — the high cost, or absence, of the real product; the acquiring of a preferential taste, by the consumer, for the substitute; and the injurious effects of coffee when used to excess. Makers of coffee substitutes usually emphasize the latter reason; but many substitutes, which are, or have been, on the market, seem to depend for their existence on the other two. Properly speaking, there are scarcely any real substitutes for coffee. The substances used to replace it are mostly like it only in appearance, and barely simulate it in taste. Besides, many of them are not used alone, but are mixed with real coffee as adulterants.

The two main coffee substitutes are chicory and cereals. Chicory, succory, *Cichorium Intybus,* is a perennial plant, growing to a height of about three feet, bearing blue flowers, having a long tap root, and possessing a foliage which is sometimes used as cattle food. The plant is cultivated generally for the sake of its root, which is cut into slices, kiln-dried, and then roasted in the same manner as coffee, usually with the addition of a small proportion of some kind of fat. The preparation and use of roasted chicory originated in Holland, about 1750. Fresh chicory[81] contains about 77 percent water, 7.5 gummy matter, 1.1 of glucose, 4.0 of bitter extractive, 0.6 fat, 9.0 cellulose, inulin and fiber, and 0.8 ash. Pure roasted chicory[82] contains 74.2 percent water-soluble material, comprised of 16.3 percent water, 26.1 glucose, 9.6 dextrin and inulin, 3.2 protein, 16.4 coloring matter, and 2.6 ash; and 25.8 percent insoluble substances, namely, 3.2 percent protein, 5.7 fat, 12.3 cellulose, and 4.6 ash. The effect of roasting upon chicory is to drive off a large percentage of water, increasing the reducing sugars, changing a large proportion of the bitter extractives and inulin, and forming dextrin and caramel as well as the characteristic chicory flavor.

The cereal substitutes contain almost every type of grain, mainly wheat, rye, oats, buckwheat, and bran. They are prepared in two general ways, by roasting the grains, or the mixtures of grains, with or without the addition of such substances as sugar, molasses, tannin, citric acid, etc., or by first making the floured grains into a dough, and then baking, grinding, and roasting. Prior to these treatments, the grains may be subjected to a variety of other treatments, such as impregnation with various compounds, or germination. The effect of roasting on these grains and other substitutes is the production of a destructive distillation, as in the case of coffee; the crude fiber, starches, and other carbohydrates, etc., being decomposed, with the production of a flavor and an aroma faintly suggesting coffee.

The number of other substitutes and imitations which have been employed are too numerous to warrant their complete description; but it will prove interesting to enumerate a few of the more important ones, such as malt, starch, acorns, soya beans, beet roots, figs, prunes, date stones, ivory nuts, sweet potatoes, beets, carrots, peas, and other vegetables, bananas, dried pears, grape seeds, dandelion roots, rinds of citrus fruits, lupine seeds, whey, peanuts, juniper berries, rice, the fruit of the wax palm, cola nuts, chick peas, cassia seeds, and the seeds of any trees and plants indigenous to the country in which the substitute is produced.

Aside from adulteration by mixing substitutes with ground coffee, and an occasional case of factitious molded berries, the main sophistications of coffee comprise coating and coloring the whole beans. Coloring of green and roasted coffees is practised to conceal damaged and inferior beans. Lead and zinc chromates, Prussian blue, ferric oxid, coal-tar colors, and other substances of a harmful nature, have been employed for this purpose, being made to adhere to the beans with adhesives. As glazes and coatings, a variety of substances have been employed, such as butter, margarin, vegetable oils, paraffin, vaseline, gums, dextrin, gelatin, resins, glue, milk, glycerin, salt, sodium bicarbonate, vinegar, Irish moss, isinglass, albumen, etc. It is usually claimed that coating is applied to retain aroma and to act as a clarifying agent; but the real reasons are usually to increase weight through absorption of water, to render low-grade coffees more attractive, to eliminate by-products, and to assist in advertising.

[81] Blyth, Wynter. *Foods.* 1909 (p. 359).
[82] Petermann. *Bied. Zentr.,* 1899 (vol. II: p. 211).

METHODS OF ANALYSIS OF COFFEES[83]

(Official and Tentative)

(Sole responsibility for any errors in compilation or printing of these methods is assumed by the author.)

GREEN COFFEE

1. *Macroscopic Examination — Tentative*

A macroscopic examination is usually sufficient to show the presence of excessive amounts of black and blighted coffee beans, coffee hulls, stones, and other foreign matter. These can be separated by hand-picking and determined gravimetrically.

2. *Coloring Matters — Tentative*

Shake vigorously 100 grams or more of the sample with cold water or 70 percent alcohol by volume. Strain through a coarse sieve and allow to settle. Identify soluble colors in the solution and insoluble pigments in the sediment.

ROASTED COFFEE

3. *Macroscopic Examination — Tentative*

Artificial coffee beans are apparent from their exact regularity of form. Roasted legumes and lumps of chicory, when present in whole roasted coffee, can be picked out and identified microscopically. In the case of ground coffee, sprinkle some of the sample on cold water and stir lightly. Fragments of pure coffee, if not overroasted, will float; while fragments of chicory, legumes, cereals, etc., will sink immediately, chicory coloring the water a decided brown. In all cases identify the particles that sink by microscopical examination.

4. *Preparation of Sample — Official*

Grind the sample to pass through a sieve having holes 0.5 mm. in diameter and preserve in a tightly stoppered bottle.

5. *Moisture — Tentative*

Dry 5 grams of the sample at 105° - 110°C. for 5 hours and subsequent periods of an hour each until constant weight is obtained. The same procedure may be used, drying *in vacuo* at the temperature of boiling water. In the case of whole coffee, grind rapidly to a coarse powder and weigh at once portions for the determination without sifting and without unnecessary exposure to the air.

6. *Soluble Solids — Tentative*

Place 4 grams of the sample in a 200-cc. flask, add water to the mark, and allow the mass to infuse for eight hours, with occasional shaking; let stand 16 hours longer without shaking, filter, evaporate 50 cc. of filtrate to dryness in a flat-bottomed dish, dry at 100° C., cool and weigh.

7. *Ash — Official*

Char a quantity of the substance, representing about 2 grams of the dry material, and burn until free of carbon at a low heat, not to exceed dull redness. If a carbon-free ash can not be obtained in this manner, exhaust the charred mass with hot water, collect the insoluble residue on a filter, burn till the ash is white or nearly so, and then add the filtrate to the ash and evaporate to dryness. Heat to low redness, until ash is white or grayish white, and weigh.

8. *Ash Insoluble in Acid — Official*

Boil the water-insoluble residue, obtained as directed under 9, or the total ash obtained as directed under 7, with 25 cc. of 10-percent hydrochloric acid (sp. gr. 1.050) for 5 minutes, collect the insoluble matter on a Gooch crucible or an ashless filter, wash with hot water, ignite and weigh.

9. *Soluble and Insoluble Ash — Official*

Heat 5 to 10 grams of the sample in a platinum dish of from 50 to 100 cc. capacity at 100° C. until the water is expelled, and add a few drops of pure olive oil and heat slowly over a flame until swelling ceases. Then place the dish in a muffle and heat at low redness until a white ash is obtained. Add water to the ash, in the platinum dish, heat nearly to boiling, filter through ash-free filter paper, and wash with hot water until the combined filtrate and washings measure to about 60 cc. Return the filter and contents to the platinum dish, carefully ignite, cool and weigh. Compute percentages of water-insoluble ash and water-soluble ash.

10. *Alkalinity of the Soluble Ash — Official*

Cool the filtrate from 9 and titrate with N/10 hydrochloric acid, using methyl orange as an indicator.

Express the alkalinity in terms of the number of cc. of N/10 acid per 1 gram of the sample.

11. *Soluble Phosphoric Acid in the Ash — Official*

Acidify the solution of soluble ash, obtained in 9, with dilute nitric acid and determine phosphoric acid (P_2O_5). For percentages up to 5 use an aliquot corresponding to 0.4 gram of substance, for percentages between 5 and 20 use an aliquot corresponding to 0.2 gram of substance, and for percentages above 20 use an aliquot corresponding to 0.1 gram of substance. Dilute to 75 - 100 cc., heat in a water-bath to 60° - 65° C., and for percentages below 5 add 20 - 25 cc. of freshly filtered molybdate solution. For percentages between 5 and 20 add 30 - 35 cc. of molybdate solution. For percentages greater than 20 add sufficient molybdate solution to insure complete precipitation. Stir, let stand in the bath for about 15 minutes, filter *at once*, wash once or twice with water by decantation, using 25 - 30 cc. each time, agitate the precipitate thoroughly and allow to settle; transfer to the filter and wash with cold water until the filtrate from two fillings of the filter yields a pink color upon the addition of phenolphthalein and one drop of the standard alkali. Transfer the precipitate and filter to the beaker, or precipitating vessel, dissolve the precipitate in a small excess of the standard alkali, add a few drops of phenolphthalein solution, and titrate with the standard acid.

12. *Insoluble Phosphoric Acid in the Ash — Official*

Determine phosphoric acid (P_2O_5) in the insoluble ash by the foregoing method.

13. *Chlorids — Official*

Moisten 5 grams of the substance in a platinum dish with 20 cc. of a 5-percent solution of sodium carbonate, evaporate to dryness and ignite as thoroughly as possible at a temperature not exceeding dull redness. Extract with hot water, filter and wash. Return the residue to

[83] Association of Official Agricultural Chemists. Sept. 1920.

the platinum dish and ignite to an ash; dissolve in nitric acid, and add this solution to the water extract. Add a known volume of N/10 silver nitrate in slight excess to the combined solutions. Stir well, filter and wash the silver chlorid precipitate thoroughly. To the filtrate and washings add 5 cc. of a saturated solution of ferric alum and a few cc. of nitric acid. Titrate the excess silver with N/10 ammonium or potassium thiocyanate until a permanent light brown color appears. Calculate the amount of chlorin.

14. *Caffein — The Fendler and Stüber Method — Tentative*

Pulverize the coffee to pass without residue through a sieve having circular openings 1 mm. in diameter. Treat a 10-gram sample with 10 grams of 10-percent ammonium hydroxid and 200 grams of chloroform in a glass-stoppered bottle and shake continuously by machine or hand for one-half hour. Pour the entire contents of the bottle on a 12.5-cm. folded filter, covering with a watch glass. Weigh 150 grams of the filtrate into a 250-cc. flask and evaporate on the steam bath, removing the last chloroform with a blast of air. Digest the residue with 80 cc. of hot water for ten minutes on a steam bath with frequent shaking, and let cool. Treat the solution with 20 cc. (for roasted coffee) or 10 cc. (for unroasted coffee) of 1-percent potassium permanganate and let stand for 15 minutes at room temperature. Add 2 cc. of 3-percent hydrogen peroxid (containing 1 cc. of glacial acetic acid in 100 cc.). If the liquid is still red or reddish, add hydrogen peroxid, 1 cc. at a time, until the excess of potassium permanganate is destroyed. Place the flask on the steam bath for 15 minutes, adding hydrogen peroxid in 0.5-cc. portions until the liquid becomes no lighter in color. Cool and filter into a separatory funnel, washing with cold water. Extract four times with 25 cc. of chloroform. Evaporate the chloroform extract from a weighed flask with aid of an air blast and dry at 100° C. to constant weight (one-half hour is usually sufficient). Weigh the residue as caffein and calculate on 7.5 grams of coffee. Test the purity of the residue by determining nitrogen and multiplying by 3.464 to obtain caffein.

15. *Caffein — Power-Chestnut Method — Official*

Moisten 10 grams of the finely powdered sample with alcohol, transfer to a Soxhlet, or similar extraction apparatus, and extract with alcohol for 8 hours. (Care should be exercised to assure complete extraction.) Transfer the extract with the aid of hot water to a porcelain dish containing 10 grams of heavy magnesium oxid in suspension in 100 cc. of water. (This reagent should meet the U. S. P. requirements.) Evaporate slowly on the steam bath with frequent stirring to a dry, powdery mass. Rub the residue with a pestle into a paste with boiling water. Transfer with hot water to a smooth filter, cleaning the dish with a rubber-tipped glass rod. Collect the filtrate in a liter flask marked at 250 cc. and wash with boiling water until the filtrate reaches the mark. Add 10 cc. of 10-percent sulphuric acid and boil gently for 30 minutes with a funnel in the neck of the flask. Cool and filter through a moistened double paper into a separatory funnel and wash with small portions of 0.5-percent sulphuric acid. Extract with six successive 25-cc. portions of chloroform. Wash the combined chloroform extracts in a separatory funnel with 5 cc. of 1-percent potassium hydroxid solution. Filter the chloroform into an Erlenmeyer flask. Wash the potassium hydroxid with 2 portions of chloroform of 10 cc. each, adding them to the flask together with the chloroform washings of the filter paper. Evaporate or distil on the steam bath to a small volume (10 - 15 cc.), transfer with chloroform to a tared beaker, evaporate carefully, dry for 30 minutes in a water oven, and weigh. The purity of the residue can be tested by determining nitrogen and multiplying by the factor 3.464.

16. *Crude Fiber — Official*

Prepare solutions of sulphuric acid and sodium hydroxid of exactly 1.25-percent strength, determined by titration. Extract a quantity of the substance representing about 2 grams of the dry material with ordinary ether, or use residue from the determination of the ether extract. To this residue in a 500-cc. flask add 200 cc. of boiling 1.25-percent sulphuric acid; connect the flask with a reflux condenser, the tube of which passes only a short distance beyond the rubber stopper into the flask, or simply cover a tall conical flask, which is well suited for this determination, with a watch glass or short stemmed funnel. Boil at once and continue boiling gently for thirty minutes. A blast of air conducted into the flask may serve to reduce the frothing of the liquid. Filter through linen, and wash with boiling water until the washings are no longer acid; rinse the substance back into the flask with 200 cc. of the boiling 1.25-percent solution of sodium hydroxid free, or nearly so, of sodium carbonate; boil at once and continue boiling gently for thirty minutes in the same manner as directed above for the treatment with acid. Filter at once rapidly, wash with boiling water until the washings are neutral. The last filtration may be performed upon a Gooch crucible, a linen filter, or a tared filter paper. If a linen filter is used, rinse the crude fiber, after washing is completed, into a flat-bottomed platinum dish by means of a jet of water; evaporate to dryness on a steam bath, dry to constant weight at 110° C., weigh, incinerate completely, and weigh again. The loss in weight is considered to be crude fiber. If a tared filter paper is used, weigh in a weighing bottle. In any case, the crude fiber after drying to constant weight at 110° C., must be incinerated and the amount of the ash deducted from the original weight.

17. *Starch — Tentative*

Extract 5 grams of the finely pulverized sample on a hardened filter with five successive portions (10 cc. each) of ether, wash with small portions of 95-percent alcohol by volume until a total of 200 cc. have passed through, place the residue in a beaker with 50 cc. of water, immerse the beaker in boiling water and stir constantly for 15 minutes or until all the starch is gelatinized; cool to 55° C., add 20 cc. of malt extract and maintain at this temperature for an hour. Heat again to boiling for a few minutes, cool to 55° C., add 20 cc. of malt extract and maintain at this temperature for an hour or until the residue treated with iodin shows no

blue color upon microscopic examination. Cool, make up directly to 250 cc., and filter. Place 200 cc. of the filtrate in a flask with 20 cc. of hydrochloric acid (sp. gr. 1.125); connect with a reflux condenser and heat in a boiling water bath for 2.5 hours. Cool, nearly neutralize with sodium hydroxid solution, and make up to 500 cc. Mix the solution well, pour through a dry filter and determine the dextrose in an aliquot. Conduct a blank determination upon the same volume of the malt extract as used upon the sample, and correct the weight of reduced copper accordingly. The weight of the dextrose obtained multiplied by 0.90 gives the weight of starch.

18. *Sugars — Tentative*

See original.[83]

19. *Petroleum Ether Extract — Official*

Dry 2 grams of coffee at 100° C., extract with petroleum ether (boiling point 35° to 50° C.) for 16 hours, evaporate the solvent, dry the residue at 100° C., cool, and weigh.

20. *Total Acidity — Tentative*

Treat 10 grams of the sample, prepared as directed under 4, with 75 cc. of 80-percent alcohol by volume in an Erlenmeyer flask, stopper, and allow to stand 16 hours, shaking occasionally. Filter and transfer an aliquot of the filtrate (25 cc. in the case of green coffee, 10 cc. in the case of roasted coffee) to a beaker, dilute to about 100 cc. with water and titrate with N/10 alkali, using phenolphthalein as an indicator. Express the result as the number of cc. of N/10 alkali required to neutralize the acidity of 100 grams of the sample.

21. *Volatile Acidity — Tentative*

Into a volatile acid apparatus introduce a few glass beads, and over these place 20 grams of the unground sample. Add 100 cc. of recently boiled water to the sample, place a sufficient quantity of recently boiled water in the outer flask and distil until the distillate is no longer acid to litmus paper. Usually 100 cc. of distillate will be collected. Titrate the distillate with N/10 alkali, using phenolphthalein as an indicator. Express the result as the number of cc. of N/10 alkali required to neutralize the acidity of 100 grams of the sample.

UNOFFICIAL METHODS

22. *Protein*

Determine nitrogen in 3 grams of the sample by the Kjeldahl or Gunning method. This gives the total nitrogen due to both the proteids and the caffein. To obtain the protein nitrogen, subtract from the total nitrogen the nitrogen due to caffein, obtained by direct determination on the separated caffein or by calculation (caffein divided by 3.464 gives nitrogen). Multiply by 6.25 to obtain the amount of protein.

23. *Ten Percent Extract — McGill Method*

Weigh into a tared flask the equivalent of 10 grams of the dried substance, add water until the contents of the flask weigh 110 grams, connect with a reflux condenser and heat, beginning the boiling in 10 to 15 minutes. Boil for 1 hour, cool for 15 minutes, weigh again, making up any loss by the addition of water, filter, and take the specific gravity of the filtrate at 15° C.

According to McGill, a 10-percent extract of pure coffee has a specific gravity of 1.00986 at 15° C., and under the same treatment chicory gives an extract with a specific gravity of 1.02821. In mixtures of coffee and chicory the approximate percentage of chicory may be calculated by the following formula:

$$\text{Percent of chicory} = 100 - \frac{(1.02821 - \text{sp. gr.})}{0.01835}$$

The index of refraction of the above solution may be taken with the Zeiss immersion refractometer or with the Abbe refractometer.

With a 10-percent coffee extract, n_d 20° = 1.3377.

With a 10-percent chicory extract, n_d 20° = 1.3448.

Determinations of the solids, ash, sugar, nitrogen, etc., may be made in the 10-percent extract, if desired.

24. *Caffetannic Acid — Krug's Method*[84]

Treat 2 grams of the coffee with 10 cc. of water and digest for 36 hours; add 25 cc. of 90-percent alcohol and digest 24 hours more, filter, and wash with 90-percent alcohol. The filtrate contains tannin, caffein, color, and fat. Heat the filtrate to the boiling point and add a saturated solution of lead acetate. If this is carefully done, a caffetannate of lead will be precipitated containing 49 percent of lead. As soon as the precipitate has become flocculent, collect on a tared filter, wash with 90-percent alcohol until free from lead, wash with ether, dry and weigh. The precipitate multiplied by 0.51597 gives the weight of the caffetannic acid.

[83] Association of Official Agricultural Chemists. Sept., 1920.

[84] U. S. Dept. Agri., Div. of Chem. *Bull.* 13 (pt. 7: p. 908).

Chapter XVIII

PHARMACOLOGY OF THE COFFEE DRINK

General physiological action — Effect on children — Effect on longevity — Behavior in the alimentary régime — Place in dietary — Action on bacteria — Use in medicine — Physiological action of "caffetannic acid" — Of caffeol — Of caffein — Effect of caffein on mental and motor efficiency — Conclusions

By Charles W. Trigg

Industrial Fellow of the Mellon Institute of Industrial Research, Pittsburgh, 1916 - 1920

THE published information regarding the effects of coffee drinking on the human system is so contradictory in its nature that it is hazardous to make many generalizations about the physiological behavior of coffee. Most of the investigations that have been conducted to date have been characterized by incompleteness and a failure to be sufficiently comprehensive to eliminate the element of individual idiosyncrasy from the results obtained. Accordingly, it is possible to select statements from literature to the effect either that coffee is an "elixir of life," or even a poison.

This is a deplorable state of affairs, not calculated to promote the dissemination of accurate knowledge among the consuming public, but it may be partly excused upon the grounds that experimental apparatus has not always been at the level of perfection that it now occupies. Also, to do justice to some of the able men who have interested themselves in this problem, it should be said that some of their results were obtained in researches, distinguished by painstaking accuracy, which have effected the establishment of the major reactions of ingested coffee.

The Physiological Action of Coffee

Drinking of coffee by mankind may be attributed to three causes: the demand for, and the pleasing effects of, a hot drink (a very small percentage of the coffee consumed is taken cold), the pleasing reaction which its flavors excite on the gustatory nerve, and the stimulating effect which it has upon the body. The flavor is due largely to the volatile aromatic constituents, "caffeol," which, when isolated, have a general depressant action on the system; and the stimulation is caused by the caffein. The general and specific actions of these individual components, together with that of the hypothetical "caffetannic acid," are considered under separate headings.

Coffee may be considered a member of the general class of adjuvant, or auxiliary, foods to which other beverages and condiments of negligible inherent food value belong. Its position on the average menu may be attributed largely to its palatability and comforting effects. However, the medicinal value of coffee in the dietary and *per se* must not be overlooked.

The ingestion of coffee infusion is always followed by evidences of stimulation. It acts upon the nervous system as a powerful cerebro-spinal stimulant, increasing mental activity and quickening the power of perception, thus making the thoughts more precise and clear, and intellectual work easier without any evident subsequent depression. The muscles are caused to contract more vigorously, increasing their working power without there being any

secondary reaction leading to a diminished capacity for work. Its action upon the circulation is somewhat antagonistic; for while it tends to increase the rate of the heart by acting directly on the heart muscle, it tends to decrease it by stimulating the inhibitory center in the medulla.[1]

The effect on the kidneys is more marked, the diuretic effect being shown by an increase in water, soluble solids, and of uric acid directly attributable to the caffein content of the coffee taken. In the alimentary tract coffee seems to stimulate the oxyntic cells and slightly to increase the secretion of hydrochloric acid, as well as to favor intestinal peristalsis. It is difficult to accept reports of coffee accomplishing both a decrease in metabolism and an increase in body heat; but if the production of heat by the demethylation of caffein to form uric acid and a possible repression of perspiration by coffee be considered, the simultaneous occurrence of these two physiological reactions may be credited.

The disagreement of medical authorities over the physiological effects of coffee is quite pronounced. This may be observed by a careful perusal of the following statements made by these men. It will be noticed that the majority opinion is that coffee in moderation is not harmful. Just how much coffee a person may drink, and still remain within the limits of moderation and temperance, is dependent solely upon the individual constitution, and should be decided from personal experience rather than by accepting an arbitrary standard set by some one who professes to be an authority on the matter.

A writer in the *British Homeopathic Review*[2] says that "the exciting effects of coffee upon the nervous system exhibit themselves in all its departments as a temporary exaltation. The emotions are raised in pitch, the fancies are lively and vivid, benevolence is excited, the religious sense is stimulated, there is great loquacity. . . . The intellectual powers are stimulated, both memory and judgment are rendered more keen and unusual vivacity of verbal expression rules for a short time." He continues:

> Hahnemann gives a characteristically careful account of the coffee headache. If the quantity of coffee taken be immoderately great and the body be very excitable and quite unused to coffee, there occurs a semilateral headache from the upper part of the parietal bone to the base of the brain. The cerebral membranes of this side also seem to be painfully sensitive, the hands and feet becoming cold, and sweat appears on the brows and palms. The disposition becomes irritable and intolerant, anxiety, trembling and restlessness are apparent. . . . I have met with headaches of this type which yielded readily to coffee and with many more in which the indicated remedy failed to act until the use of coffee as a beverage was abandoned. The eyes and ears suffer alike from the superexcitation of coffee. There is a characteristic toothache associated with coffee.

In apparent contradiction of this opinion, Dr. Valentin Nalpasse,[3] of the Faculty of Medicine of Paris, states:

> When coffee is properly made and taken in moderation, it is a most valuable drink. It facilitates the digestion because it produces a local excitement. Its principal action gives clear and stable imaginative power to the brain. By doing that, it makes intellectual work easy, and, to a certain extent, regulates the functions of the brain. The thoughts become more precise and clear, and mental combinations are formed with much greater rapidity. Under the influence of coffee, the memory is sometimes surprisingly active, and ideas and words flow with ease and elegance. . . . Many people abuse coffee without feeling any bad effect.

Discussing the use and abuse of coffee, I. N. Love[4] says:

> The world has in the infusion of coffee one of its most valuable beverages. It is a prompt diffusible stimulant, antiseptic and encourager of elimination. In season it supports, tides over danger, helps the appropriate powers of the system, whips up the flagging energies, enhances the endurance; but it is in no sense a food, and for this reason it should be used temperately.

Also Dr. Jonathan Hutchinson[5] makes the following weighty pronouncement:

> In reference to my suggestion to give children tea and coffee, I may explain that it is done advisedly. There is probably no objection to their use even at early ages. They arouse the dull, calm the excitable, prevent headaches, and fit the brain for work. They preserve the teeth, keep them tight in their place, strengthen the vocal chords, and prevent sore throat. To stigmatize these invaluable articles of diet as "nerve stimulants" is an erroneous expression, for they undoubtedly have a right to rank as nerve nutrients.

But Dr. Harvey Wiley[6] comes forth with evidence on the other side, saying:

> The effects of the excessive use of coffee, tea, and other natural caffein beverages is well known. Although the caffein is combined in these

[1] Niles, G. M. *Tea & Coffee Trade Jour.*, 1910 (vol. xix: no. 1: p. 27).
[2] Through *The Sun*, New York, July 17, 1910.
[3] *Annales Politiques et Littéraires*, through *Tea & Coffee Trade Jour.*, 1906 (vol. x: p. 303).
[4] *Jour. Am. Med. Assoc.*, 1891 (vol. xvi).
[5] *The Times*, London, Oct. 1, 1904; through *Tea & Coffee Trade Jour.*, 1911 (vol. xxi: p. 36).
[6] *Good Housekeeping*, through *Tea & Coffee Trade Jour.*, 1912 (vol. xxiii: p. 237).

beverages naturally, and they are as a rule taken at meal times, which mitigates the effects of the caffein, they are recognized by every one as tending to produce sleeplessness, and often indigestion, stomach disorders, and a condition which, for lack of a better term, is described as nervousness. . . . The excessive drinking of tea and coffee is acknowledged to be injurious by practically all specialists.

Dr. V. C. Vaughn,[7] of the University of Michigan, speaking of tea and coffee, expresses this opinion:

I believe that caffein used as a beverage and in moderation not only is harmless to the majority of adults, but is beneficial.

This verdict is upheld by the results of a symposium[8] conducted by the *Medical Times,* in which a large majority of the medical experts participating, among whom may be enumerated Drs. Lockwood, Wood, Hollingworth, Robinson, and Barnes, agreed that the drinking of coffee is not harmful *per se,* but that over-indulgence is the real cause of any ill effects. This is also true of any ingested material.

Insomnia is a condition frequently attributed to coffee, but that the authorities disagree on this ground is shown by Wiley's[9] contention, "We know beyond doubt that the caffein (in coffee) makes a direct attack on the nerves and causes insomnia." While Woods Hutchinson[9] observes:

Oddly enough, a cup of hot, weak tea or coffee, with plenty of cream and sugar, will often help you to sleep, for the grateful warmth and stimulus to the lining of the stomach, drawing the blood into it and away from the head, will produce more soothing effects than the small amount of caffein will produce stimulating and wakeful ones.

The writer has often had people remark to him that while black coffee sometimes kept them awake, coffee with cream or sugar or both made them drowsy.

In the course of experiments conducted by Montuori and Pollitzer[10] it was found that coffee prepared by hot infusion when given by mouth or hypodermically with the addition of a small dose of alcohol proved an efficient means of combating the pernicious effects of low temperatures. Coffee prepared by boiling, and tea, showed negative effects.

The value of coffee as a strength-conserver, and its function of increasing endurance, morale, and healthfulness, was demonstrated by the great stress which the military authorities, in the late and in previous wars, placed upon furnishing the soldiers with plenty of good coffee, particularly at times when they were under the greatest strain. Various articles[11] record this fact; and these statements are further borne out by the data given below in the discussion of the physiological effects of caffein, to which the majority of the stimulating effects of coffee may be attributed.

According to Fauvel,[12] with a healthy patient on a vegetable diet, chocolate and coffee increase the excretion of purins, diminishing the excretion of uric acid and apparently hindering the precipitation of uric acid in the organism. This diminution, however, was not due to retention of uric acid in the organism.

"Habit-forming" is one of the adjectives often used in describing coffee, but it is a fact that coffee is much less likely than alcoholic liquors to cause ill effects. A man rarely becomes a slave of coffee; and excessive drinking of this beverage never produces a state of moral irresponsibility or leads to the commission of crime. Dr. J. W. Mallet,[13] in testimony given before a Federal Court, stated that caffein and coffee were not habit-forming in the correct sense of the term. His definition of the expression is that the habit formed must be a detrimental and injurious one — one which becomes so firmly fixed upon a person forming it that it is thrown off with great difficulty and with considerable suffering, continuous exercise of the habit increasing the demand for the habit-forming drug. It is well known that the desire ceases in a very short period of time after cessation of use of caffein-containing beverages, so that in that sense, coffee is not habit-forming.

It has been shown by Gourewitsch[14] that the daily administration of coffee produces a certain degree of tolerance, and that the doses must be increased to obtain toxic results. Harkness[15] has been quoted as stating that "taken in moderation, coffee is one of the most wholesome beverages known. It assists digestion, exhilarates the spirits, and counteracts the tendency to sleep."

[7] *Tea & Coffee Trade Jour.,* 1913 (vol. xxiv: p. 455).
[8] *Tea & Coffee Trade Jour.,* 1912 (vol. xxiii: p. 356).
[9] *Good Housekeeping,* through *Tea & Coffee Trade Jour.,* 1915 (vol. xxviii: p. 533).
[10] *Atti. accad. Lincei,* 1915 (vol. xxiv: no. 2: pp. 543-48).
[11] Nalpasse, Dr. Valentin, *loc. cit.* (see 3).
Flint, Dr. Austin B. *Text Book of Physiology.*
Wood, H. C., Jr. *Therapeutic Gazette,* 1912 (vol. xxxvi: p. 13).
[12] *Compt. rend.* (vol. cxlviii: p. 1541).
[13] *Tea & Coffee Trade Jour.,* 1914 (vol. xxvi: p. 539).
[14] *Arch. exp. Path. Pharm.,* 1907 (vol. lvii: p. 214).
[15] *Universal Dictionary,* 1897 (vol. 1: p. 1097).

MEN AND WOMEN LABORERS PICKING COFFEE ON A SAO PAULO ESTATE

SACKING COFFEE IN A WAREHOUSE AT THE PORT OF SANTOS

PICKING AND SACKING COFFEE IN BRAZIL

Carl V. Voit,[16] the German physiological chemist, says this about coffee:

> The effect of coffee is that we are bothered less by unpleasant experiences and become more able to conquer difficulties; therefore, for the feasting rich, it makes intestinal work after a meal less evident and drives away the deadly ennui; for the student it is a means to keep wide awake and fresh; for the worker it makes the day's fatigue more bearable.

Dr. Brady[17] believes that the so-called harmfulness of coffee is mainly psychological, as evidenced by his expression, "Most of the prejudice which exists against coffee as a beverage is based upon nothing more than morbid fancy. People of dyspeptic or neurotic temperament are fond of assuming that coffee must be bad because it is so good, and accordingly, denying themselves the pleasure of drinking it."

The recounting of evidence, both *pro* and *con*, relevant to the general effects of coffee could continue almost *ad infinitum*, but the fairest unification of the various opinions is best quoted from Woods Hutchinson[18]:

> Somewhere from 1 to 3 percent of the community are distinctly injured or poisoned by tea or coffee, even small amounts producing burning of the stomach, palpitation of the heart, headache, eruptions of the skin, sensations of extreme nervousness, and so on; though the remaining 97 percent are not injured by them in any appreciable way if consumed in moderation.

So, if one is personally satisfied that he belongs to the abnormal minority, and has not been argued by fallacious reasoning into his belief that coffee injures him, he should either reduce his consumption of coffee or let it alone. Even those most vitally interested in the commercial side of coffee will admit that this is the logical procedure.

Effects of Coffee on Children

The same sort of controversy has raged around the question of the advisability of giving coffee to children as has occurred regarding its general action. Dr. J. Hutchinson[19] advocates furnishing children with coffee, while Dr. Charlotte Abbey[20] is strongly against such a practise, claiming that use of caffein-containing beverages before the attainment of full growth will weaken nerve power. Nalpasse[21] observes that until fully developed the young are immoderately excited by coffee; and Hawk[22] is of the opinion that to give such a stimulant to an active school-child is both logically and dietetically incorrect. Dr. Vaughn[23] advances this scientific argument against the drinking of coffee by children under seven years of age:

> In proportion to body weight the young contain more of the xanthin bases than adults. They are already laden with these physiological stimulants, and the additional dose given in tea or coffee may be harmful.

In a study of the effects of coffee drinking upon 464 school children, C. K. Taylor[24] found a slight difference in mental ability and behavior, unfavorable to coffee. About 29 percent of these children drank no coffee; 46 percent drank a cup a day; 12 percent, 2 cups; 8 percent, 3 cups; and the remainder, 4 or more cups a day. The measurements of height, weight, and hand strength also showed a slight advantage in favor of the non-coffee drinkers. If these results be taken as truly representative, their indication is obvious. However, it seems desirable to repeat these experiments upon other groups; at the same time noting carefully the factors of environment, and other diet, before any criterion is made.

As a refutation to this experimental evidence is the practical experience of the inhabitants of the Island of Groix, off the Brittany coast, whose annual consumption of coffee is nearly 30 pounds per capita, being ingested both as the roasted bean and as an infusion. It is reported that many of the children are nourished almost entirely on coffee soup up to ten years of age, yet the mentality and physique of the populace does not fall below that of others of the same stock and educational opportunities.[25]

Pertinent in this connection is Hawk's[22] statement that young mothers should refrain from the use of coffee, as caffein stimulates the action of the kidneys and tends to bring about a loss from the body of some of the salts necessary to the development of the unborn child as well as for the proper production of milk during the nursing period. The caffein of coffee also increases the flow of milk, but the milk produced is correspondingly dilute and a later decreased secretion may be expected.

[16] *Handbuch der Physiologie*, 1881 (vol. vi: p. 435).
[17] *The Coffee Club*, 1921 (vol. i: p. 4).
[18] *Saturday Evening Post*, through *Tea & Coffee Trade Jour*, 1914 (vol. xxvii: p. 586).
[19] *Loc. cit.* (see 5).
[20] *Seven Truths to Teach the Young in Regard to Life and Sex*, No. 2.
[21] *Loc. cit.* (see 3).
[22] *Ladies' Home Journal*, Dec., 1916 (p. 37).
[23] *Loc. cit.* (see 7).
[24] *Psych. Clin.* (vol. vi: pp. 56-58).
[25] *Tea & Coffee Trade Jour.*, June, 1905 (p. 274).

Furthermore, some of the caffein of the coffee may pass into the mother's milk, thus reaching the child, so that the use of coffee during the nursing period is undesirable on this ground also." Naturally, the question arises as to whether this arraignment is purely theoretical or based upon analytical and clinical data.

It is a difficult matter definitely to set an age below which coffee should not be drunk, as the time of reaching maturity varies with climate and ancestral origin. Yet, from a theoretical standpoint, children before or during the adolescent period should be limited to the use of a rather small amount of tea and coffee as beverages, as their poise and nerve control have not reached a stage of development sufficient to warrant the stimulation incident to the consumption of an appreciable quantity of caffein.

Coffee Drinking and Longevity

There are many who would have us believe that the use of coffee is only a means toward the end of quickly reaching the great beyond; but it is known that the habitual coffee drinker generally enjoys good health, and some of the longest-lived people have used it from their earliest youth without any apparent injury to their health. Nearly every one has an acquaintance who has lived to a ripe old age despite the use of coffee. Quoting Metchnikoff[27]:

> In some cases centenarians have been much addicted to the drinking of coffee. The reader will recall Voltaire's reply when his doctor described the grave harm that comes from the abuse of coffee, which acts as a real poison. "Well", said Voltaire, "I have been poisoning myself for nearly eighty years." There are centenarians who have lived longer than Voltaire and have drunk still more coffee. Elizabeth Durieux, a native of Savoy, reached the age of 114. Her principal food was coffee, of which she took daily as many as forty small cups. She was jovial and a boon table companion, and used black coffee in quantities that would have surprised an Arab. Her coffee-pot was always on the fire, like the tea-pot in an English cottage (Lejoncourt, p. 84; Chemin, p. 147).

The entire matter resolves itself into one of individual tolerance, resistivity, and constitution. Numerous examples of young abstainers who have died and coffee drinkers who have still lived on can be found, and *vice versa,* the preponderance of instances being in neither direction. Bodies of persons killed by accident have been painstakingly examined for physiological changes attributable to coffee; but no difference between those of coffee and of non-coffee drinkers (ascertained by careful investigation of their life history) could be discerned.[28] In the long run, it is safe to say that the effect of coffee drinking upon the prolongation or shortening of life is neutral.

Coffee in the Alimentary Tract

When coffee is taken *per os* it passes directly to the stomach, where its sole immediate action is to dilute the previous contents, just as other ingested liquids do. Eventually the caffein content is absorbed by the system, and from thence on a stimulation is apparent. Considerable conjecture has occurred over the difference in the effects of tea and coffee, the most feasible explanation advanced being one appearing in the London *Lancet*.[29]

> The caffein tannate of tea is precipitated by weak acids, and the presumption is that it is precipitated by the gastric juice and, therefore, the caffein is probably not absorbed until it reaches the alkaline alimentary tract. In the case of coffee, however, in whatever form the caffein may be present, it is soluble in both alkaline and acid fluids, and, therefore, the absorption of the alkaloid probably takes place in the stomach.

This theory, if true, goes far toward explaining the more rapid stimulation of coffee.

The statement has sometimes been made that milk or cream causes the coffee liquid to become coagulated when it comes into contact with the acids of the stomach. This is true, but does not carry with it the inference that indigestibility accompanies this coagulation. Milk and cream, upon reaching the stomach, are coagulated by the gastric juice; but the casein product formed is not indigestible. These liquids, when added to coffee, are partially acted upon by the small acid content of the brew, so that the gastric juice action is not so pronounced, for the coagulation was started before ingestion, and the coagulable constituent, casein, is more dilute in the cup as consumed than it is in milk. Accordingly, the particles formed by it in the stomach will be relatively smaller and more quickly and easily digested than milk *per se*. It has been observed that coffee containing milk or cream is not as stimulating as black coffee. The writer believes that

[27] *The Prolongation of Life.*

[28] Hekteon and LeConte.

[29] Through *Tea & Coffee Trade Jour.*, 1914 (vol. xxvi: pp. 29 32).

this is probably due to mechanical inclusion of caffein in the casein and fat particles, and also to some adsorption of the alkaloid by them. This would materially retard the absorption of the caffein by the body, spread the action over a longer period of time, and hence decrease the maximum stimulation attained.

In a few instances, a small fraction of one percent of coffee users, there is a certain type of distress, localized chiefly in the alimentary tract, caused by coffee, which can not be blamed upon the much-maligned caffein. The irritating elements may be generally classified as compounds formed upon the addition of cream or milk to the coffee liquor, volatile constituents, and products formed by hydrolysis of the fibrous part of the grounds. It may be generally postulated that the main causation of this discomfort is due to substances formed in the incorrect brewing of coffee, the effect of which is accentuated by the addition of cream or milk, when the condition of individual idiosyncrasy is present.

Without enlarging upon his reason, Lorand[30] concludes that neither tea nor coffee is advisable for weak stomachs. Nalpasse,[31] however, believes that coffee taken after meals makes the digestion more perfect and more rapid, augmenting the secretions, and that it agrees equally well with people inclined to embonpoint and heavy eaters whose digestion is slow and difficult. Thompson[32] also observes that coffee drunk in moderation is a mild stimulant to gastric digestion.

Eder[33] reported, as the result of an inquiry into the action of coffee on the activity of the stomachs of ruminants, that coffee infusions produced a transitory increase in the number and intensity of the movements of the paunch, but that the influence exercised was very irregular.

An elaborate investigation of the action of tea and coffee on digestion in the stomach was made by Fraser,[34] in which he found that both retard peptic digestion, the former to a greater degree than the latter. The digestion of white of egg, ham, salt beef, and roast beef was much less affected than that of lamb, fowl, or bread. Coffee seemed actually to aid the digestion of egg and ham. He attributed the retarding effect to the tannic acid of the tea and the volatile constituents of the coffee — the caffein itself favoring digestion rather than otherwise. Tea increased the production of gas in all but salt foods, whereas coffee did not. Coffee is, therefore, to be preferred in cases of flatulent dyspepsia.

Hutchinson, in his *Food and Dietetics*, opines:

> As regards the practical inferences to be drawn from experiences and observations, it may be said that in health the disturbance of digestion produced by the infused beverages (tea and coffee) is negligible. Roberts, indeed, goes so far as to suggest that the slight slowing of digestion which they produce may be favored rather than otherwise, as tending to compensate for too rapid digestibility which refinements of manufacture and preparation have made characteristic of modern foods.

Regarding increase in secretory activity, Moore and Allanston[35] report that in their experience meat extracts, tea, caffein solution, and coffee call forth a greater gastric secretion than does water, while with milk the flow of gastric juice seems to be retarded. Cushing[36] and others support this statement. This action is partially explained by Voit on the grounds that all tasty foods increase gastric secretion, the action being partly psychological; but Cushing observed the same effects upon introducing coffee directly into the stomachs of animals.

In general, a moderate amount of coffee stimulates appetite, improves digestion and relieves the sense of plenitude in the stomach. It increases intestinal peristalsis, acts as a mild laxative, and slightly stimulates secretion of bile. Excessive use, however, profoundly disturbs digestive function, and promotes constipation and hemorrhoids.[37] There is much evidence to support the view that "neither tea, coffee, nor chicory in dilute solutions has any deleterious action on the digestive ferments, although in strong solutions such an action may be manifest."[38] After conducting exhaustive experiments with various types of coffee, Lehmann[39] concluded that ordinary coffee is without effect on the digestion of the majority of sound persons, and may be used with impunity.

[30] *Old Age Deferred*, 1910.
[31] *Loc. cit.* (see 3).
[32] *Practical Dietetics*, 1917 (p. 254).
[33] *Zentr. Biochem Biophys*, 1912 (vol. xiii: p. 504).
[34] *Jour. Anat. & Physi.*, through *Tea & Coffee Trade Jour.*, 1913 (vol. xxv: p. 345).
[35] *Lancet*, Dec 2, 1911.
[36] *Pharmacology*, 1913 (p. 258).
[37] Butler, *Materia Medica, Therapeutics and Pharmacology*, 1906 (p. 256).
[38] Togami, K. *Biochem. Zeit*, 1908 (vol. ix: p. 453).
[39] *Munch. Med. Wochenschr.* (vol. lx: pp. 281-85, 357-61).
Naturwiss. Umschau. d. Chem., Ztg. 1913 (p. 4).
Schweiz. Wochenschr. (vol. li: pp. 490-92).

Coffee in the Dietary — Food Value

There are three things to be considered in deciding upon the inclusion of a substance in the dietary — palatability, digestibility without toxicity or disarrangement, and calorific value. Coffee is as satisfactory from these viewpoints as any other food product.

The palatability of a well-made cup of good coffee needs no eulogizing; it speaks for itself. It adds enormously to the attractiveness of the meal, and to our ability to eat with relish and appetite large amounts of solid foods, without a subsequent uncomfortable feeling. Wiley[40] says that the feeling of drowsiness after a full meal is a natural condition incidental to the proper conduct of digestion, and that to drive away this natural feeling with coffee must be an interference with the normal condition. However, if by so doing, we can increase our over-all efficiency without material harm to our digestive organs (and we can and do), the procedure has much in its favor both psychologically and dietetically.

The fact that coffee favors digestion without eventual disarrangement has been demonstrated above. On the subject of the relative agreement with the constitution of foods of daily consumption, Dr. English[41] said:

> It is well known that there is no species of diet which invariably suits all constitutions, nor will that which is palatable and salutary at one time be equally palatable and salutary at another time to the same individual. I think the most natural food provided for us is milk; yet I will engage to show twenty instances where milk disagrees more than coffee.

Further in this regard, Hutchinson[42] considers that ninety percent of the "dyspepsias" attributed to coffee are due to malnutrition, or to food simultaneously ingested, no disease known to the medical profession being directly attributable to it.

No one cognizant of the facts will contend that a cup of black coffee has any direct food value; but not so with the roasted bean. This has quite an appreciable content of protein and fat, both substances of high calorific value. The inhabitants of the Island of Groix eat the whole roasted coffee bean in considerable quantity, and seem to obtain considerable nourishment therefrom. Also, the Galla, a wandering tribe of Africa, make large use of food balls, about the size of billiard balls, consisting of pulverized coffee held in shape with fat. One ball is said to contain a day's ration; and, because of its food content and stimulating power, serves to sustain them on long marches of days' duration.

When an infusion, or decoction, of roasted coffee is made, about 1.25 percent of the extracted matter is protein, it being accompanied by traces of dextrin and sugar. The same dearth of extraction of food materials occurs upon infusing coffee substitutes. This small amount can have but little dietetic significance. However, upon addition of sugar and of milk or cream, with their content of protein, fat, and lactose, the calorific value of the cup of coffee rises. Lusk and Gephart[43] give the food value of an ordinary restaurant cup of coffee as 195.5 calories, and Locke[44] gives it as 156.

Mattei[44a] found that 8 cc. of an infusion of roasted Mocha coffee of five-percent strength suppressed incipient polyneuritis in pigeons within a few hours' time. Their weight did not improve, but otherwise they were completely restored to health. However, in from four to six weeks after the apparent cure, the symptoms rapidly returned and the pigeons perished, with symptoms of paralysis and cerebral complications. The temporary cure was probably due to caffein stimulation and secondary actions of the volatile constituents of coffee, which may be related to the vitamines; for it is not likely that the vitamines would withstand the heat of roasting. If B-vitamine does occur in roasted coffee, it is present only in traces.[44b]

The inclusion of coffee in the average dietary is warranted because of its evident worth as an aid to digestion and for its assimilating power, thus earning its characterization as an "adjuvant food."

Action of Coffee on Bacteria

The employment of coffee as an aid to sanitation has been but little considered. Coffee, when freshly roasted and ground, is deodorant, antiseptic, and germicidal, probably due to the empyreumatic products developed during the process of roasting. An infusion of 0.5 percent inhibits the growth of many pathogenic organisms, and

[40] *Loc. cit.* (see 6).
[41] Through *Tea & Coffee Trade Jour.*, 1916 (vol. xxx: p. 443).
[42] *Tea & Coffee Trade Jour.*, 1909 (vol. xvi: p. 271).
[43] Frankel, F. H. *Tea & Coffee Trade Jour.*, 1916 (vol. xxxi: p. 446).
[44] *Food Values*, 1914 (p. 54).
[44a] *Policlin.*, 1920 (no. 27: p. 1011).
[44b] Funk, C. *The Vitamines*, 1922 (p. 270).

those of 10 percent kill anthrax bacteria in three hours, cholera spirilla in four hours, and many other bacteria, including those producing typhoid, in two to six days.[46]

The maintenance of a low rate of contraction of typhoid fever has often been attributed to drinking of coffee instead of water, the action of the coffee being partly due to the bactericidal effect of the caffeol and partly to the boiling of the water before infusion. The stimulating tendency of the caffein to sustain and to "tide over" those of low vitalities is also evidenced.

Use of Coffee in Medicine

Coffee has been employed in medicinal practise as a direct specific, as a preventive, and as an antidote. The *United States Dispensatory*[46] summarizes the uses of caffein and coffee as follows:

Caffein is a valuable remedy in practical medicine as a cerebral and cardiac stimulant and as a diuretic. In undue *somnolence*, in *nervous headache*, in *narcotism*, also, at times when the exigencies of life require excessively prolonged wakefulness, caffein may be used as the most powerful agent known for producing wakefulness. In a series of experiments, J. Hughes Bennett found that within narrow limits there is a direct physiological antagonism between caffein and morphine. Coffee and caffein in narcotic poisoning are of value as a means of keeping the patient awake, and of stimulating the respiratory centres.

As a cardiac stimulant, caffein may be used in any form of heart failure; the indications for its use are those which call for the employment of digitalis. It is superior to digitalis in never disagreeing with the stomach, in having no distinctive cumulative tendency, and in the promptness of its action. It is pronouncedly inferior to digitalis in the power and certainty of its action, and in the permanence of its influence once asserted. As a diuretic it is superior; it is very valuable in the treatment of *cardiac dropsies*, and is often useful in *chronic Bright's disease* when there is no irritation of the kidneys.

On account of its tendency to produce wakefulness, it is usually better to mass the doses early in the day, at least six hours being left between the last dose and the ordinary time for sleep. From eight to fifteen grams (of caffein) may be given in the course of a day in severe cases. If tried, it would probably prove a useful drug in cases of *sudden collapse* from various causes.

Good effects of coffee are recounted by Thompson.[47]

It removes the sensation of fatigue in the muscles, and increases their functional activity; it allays hunger to a limited extent; it strengthens the heart action; it acts as a diuretic, and increases the excretion of urea; it has a mildly sudorific influence; it counteracts nervous exhaustion and stimulates nerve centers. It is used sometimes as a nervine in cases of migraine, and there are many persons who can sustain prolonged mental fatigue and strain from anxiety and worry much better by the use of strong black coffee. In low delirium, or when the nervous system is overcome by the use of narcotics or by excessive hemorrhage, strong black coffee is serviceable to keep the patient from falling into the drowsiness which soon merges into coma. In such cases as much as half a pint of strong black coffee may be injected into the rectum.

Strong coffee with a little lemon juice or brandy is often useful in overcoming a malarial chill or a paroxysm of asthma. It is a useful temporary cardiac stimulant for children suffering collapse.

Dr. Restrepo,[48] of Medellin, Colombia, claims to have cured many cases of chronic malaria and related diseases with infusion of green coffee, after quinine had failed. Wallace[49] states that tincture of green coffee is a natural and efficacious specific for cholera, and that she knows of more than a thousand cases of cholera and diarrhea which have been treated with it without an isolated case of failure. Landanabileo has been quoted as using raw coffee infusion in hepatic and nephritic diseases, venal and hepatic colics, and in diabetes.

In the Civil War, surgeons utilized coffee in allaying malarial fever and other maladies with which they had to contend, often under the most trying conditions, and with severely limited means of combating disease.[50] Its effect is to counteract the depressant action of low and miasmatic atmospheres, opening the secretions which they have checked. Travelers from the colder climes soon find that the fragrant cup of coffee is a corrective to derangements of the liver resulting from climatic conditions.[51]

Dr. Guillasse, of the French Navy, in a paper on typhoid fever, says:

Coffee has given us unhoped for satisfaction, and after having dispensed it we find, to our great surprise, that its action is as prompt as it is decisive. No sooner have our patients taken a few tablespoonfuls of it, than their features become relaxed and they come to their senses. The next day the improvement is such that we are tempted to look upon coffee as a specific against typhoid fever. Under its influence the stupor is dispelled, and the patient arouses from

[46] Potter. *Materia Medica, Pharmacy and Therapeutics*. 10th ed., 1906 (p. 187).
Culbreth. *Materia Medica and Pharmacology*, 2nd ed. (p. 520).
[46] Nineteenth ed. (p. 254).
[47] *Loc. cit.* (see 32).
[48] Keable. B. B. *Coffee* (p. 97).
[49] Wallace, Mrs. C. L. H. "Cholera: Its Cause and Cure." *The Herald of Health*, through *Tea & Coffee Trade Jour.*, 1908 (vol. xiv: p. 22).
[50] "S. Culapius", *Tea & Coffee Trade Jour.*, 1913 (vol. xxv: p. 239).
[51] *Tea & Coffee Trade Jour.*, 1913 (vol. xxv: p. 458).

the state of somnolency in which he has been since the invasion of the disease. Soon all the functions take their natural course, and he enters upon convalescence.[52]

Also it has been reported that in extreme cases of yellow fever, coffee has been used most effectively by many physicians as the main reliance after all other well known remedies have been administered and failed.

According to Lorand,[53] the use of coffee in gout is strictly prohibited by Umber and Schittenhelm; but he considered it a mistake absolutely to forbid coffee, as, when a person has good kidneys, the small amount of uric acid furnished by the caffein can readily be eliminated. A curious remedy for gout and rheumatism, the efficacy of which the writer scouts, is said to be[54] — a pint of hot, strong, black coffee, which must be perfectly pure, and seasoned with a teaspoonful of pure black pepper, thoroughly mixed before drinking, and the preparation taken just before going to bed. If this have any value, it is probably purely psychological in its function.

Several writers[55] attribute amblyopia and other affections of the sight to coffee and chicory, without giving much conclusive experimental data. Beer,[56] a Vienna oculist, however, held that the vapor from pure, hot, freshly-made coffee is beneficial to the eyes.

Coffee and caffein are physiologically antagonistic to the common narcotics, nicotine, morphine, opium, alcohol, etc., and are frequently used as antidotes for these poisons. Binz found that dogs that have been stupified with alcohol could be awakened with coffee. It may thus be prescribed for hard drinkers to counteract the baleful excitability produced by alcohol; in fact, many topers taper off after a long debauch with coffee containing small amounts of alcoholic beverages. Considering its ability to counteract the slow intoxication of tobacco, it may be inferred that coffee is indispensable for hard smokers.

In general, the medicinal value of coffee may be said to be directly attributable to its caffein content, although its antiseptic properties are dependent upon the volatile aromatic constituents. Its function is to raise and to sustain vitalities which have been lowered by disease or drugs. Although some of the cures attributed to it are probably purely traditional; still, it must be admitted, that by utilizing its stimulating qualities in many illnesses the patient may be carried past the danger point into convalescence.

Physiological Action of "Caffetannic Acid"

It has been demonstrated in chapter XVII that there is no definite compound "caffetannic acid," and that the heterogeneous material designated by this name does not possess the properties of tanning. Further substantiation of this contention, and more evidence of the innocuous character of the tannin-like compounds in coffee, are contained in the testimony of Sollmann.[57] "Tannins precipitate proteins, gelatine, and connective tissue, and thus act as astringents, styptics, and antiseptics. The different tannins are not equivalent in these respects. Some (which are perhaps misnamed) such as those of coffee and ipecac, are practically non-precipitant. . . . On the whole, one may say that the small quantities of tannin ordinarily taken with the food and drink are not injurious, but that large quantities (excessive tea drinking) are certainly deleterious. The tannin of coffee is scarcely astringent, and, therefore, lacks this action," which is proven by the fact that it does not precipitate proteins.

"It has been claimed that 'caffetannic acid' injuries the stomach walls, but there is no evidence that this is so."[58] Wiley,[59] in reporting some of his experiments, says: "Apparently the efforts to saddle the injurious effects of coffee-drinking upon caffetannic acid in any form in which it may exist in the coffee-extract are not supported by these recent data." The fact that tannins retard intestinal peristalsis, whereas coffee promotes this digestive action, lends further proof to the non-existence of tannin in coffee. These statements by eminent authorities may be consolidated into the verity that there is no tannin, in the true sense of the term, in coffee; and that the constituents of the coffee brew which have been so designated are physiologically harmless.

[52] Thurber, F. B. *Coffee from Plantation to Cup* (p. 182).
[53] *Health and Longevity Through Rational Diet.*
[54] Keable, B. B. *Coffee* (p. 98).
[55] Bulson, A. E. J. *Am. Jour. Opthal.*, 1905 (vol. xxii: pp 55-64)
Handbook of Medical Science (vol. iii: p. 190).
[56] Keable, B. B. *Coffee* (p. 98).
[57] *A Manual of Pharmacology* (pp. 137. 215).
[58] Hawk, Philip B. *Loc. cit.* (see 22).
[59] *Good Housekeeping*, Oct., 1917 (p. 144).

Physiological Action of Caffeol

The evidence regarding the physiological action of caffeol is contradictory in many cases. J. Lehmann found in 1853, that the "empyreumatic oil of coffee, *caffeone,*" is active; but more recent investigations have yielded results at variance with this. Hare and Marshall[60] believe that they proved it to be active. E. T. Reichert,[61] however, found it inactive in dogs, excepting in so far that, when given intravenously, it mechanically interfered with the circulation. With it Binz[62] was able to produce in man only feeble nervous excitement, with restlessness and increase in the rate and depth of respirations.

The general effects, as summated by Sollmann[63] are, for *small doses,* pleasant stimulation; increased respiration; increased heart rate, but fall of blood pressure; muscular restlessness; insomnia; perspiration; congestion; for *large doses,* increased peristalsis and defecation: depression of respiration and heart; fall of blood pressure and temperature; paralytic phenomena. It is doubtful whether the quantities taken in the beverage cause any direct central stimulation.

Investigations have also been conducted with the various known constituents of this "coffee oil." Erdmann[64] found that in doses of between 0.5 and 0.6 gram per kilo of body weight, furane-alcohol kills a rabbit by respiratory paralysis; and that the symptoms of poisoning are a short primary excitement, salivation, diarrhea, respiratory depression, continuous fall of the body temperature, and death from collapse with respiratory failure. In man, doses of from 0.6 to 1 gram of furane-alcohol increased respiratory activity without producing other symptoms.

However, man is not as susceptible to these compounds as are the smaller animals. But even if their relative susceptibility be assumed to be the same, the lethal dose given the rabbit is equivalent to giving a 140-pound man one dose containing the furane-alcohol content of over 5,000 cups of coffee. Thus, in view of the very apparent minuteness of the quantity of this compound present in one cup of coffee, together with the fact that it is not cumulative in its physiological action, the importance of its toxic properties becomes very inconsequential to even the most profuse and inveterate coffee drinkers.

Burmann[65] reported the volatile principle to have a reducing action on the hemoglobin; a depressing effect on the blood pressure; a depressant action on the central nervous system, disturbing the cardiac rhythm; and an action on the respiratory centers, causing dyspnea. The report of Sayre[66] regarding the minimum lethal dose of the concentrated combined active principles of coffee obtained from dry distillation is, for frogs, administered intraperitoneally and subcutaneously, 0.03 cubic centimeters per gram of body weight; for guinea pigs per stomach, 7.0 cc. per kilogram of body weight, and administered intravenously and intraperitoneally, about 1.0 cc. per kilogram.

This evidence regarding the physiological action of caffeol can not in any wise be construed to indicate a harmfulness of coffee. The percentage of these volatile substances in a cup of coffee infusion is so low as to be relatively negligible in its action. And, again, the caffein content of the brew, as will be seen, tends to counteract any possible desultory effects of the caffeol.

General Physiological Action of Caffein

More attention has been given to the study of the physiological action of caffein than to that of the other individual constituents of coffee. Since certain of the effects of coffee drinking have been attributed to this alkaloid, a brief presentment of the pharmacology of caffein will be given as an exposition of the many statements made regarding it. According to the *British Pharmaceutical Codex*[67]:

Caffein exerts three important actions: (1) on the central nervous system: (2) on muscles, including cardiac: and (3) on the kidney. The action on the central nervous system is mainly on that part of the brain connected with psychical functions. It produces a condition of wakefulness and increased mental activity. The interpretation of sensory impressions is more perfect and correct, and thought becomes clearer and quicker. With larger doses of caffein the action extends from the psychical areas to the motor area and to the cord, and the patient becomes at first restless and noisy, and later may show convulsive movements.

Caffein facilitates the performance of all forms of physical work, and actually increases the total work which can be obtained from

[60] *Med. News,* 1886 (p. 52).
[61] *Med. News,* 1890 (p. 56).
[62] *Centr. In. Med.,* 1900 (p. 21).
[63] *Loc. cit.* (see 57).
[64] *Arch. Exper. Path. Pharm.,* 1902 (bd. 48).
[65] *Bull. gen. therap.* (vol. clxvi: p. 379).
Zentr. Biochem. Biophys. (vol. xvi: p. 79).
[66] *Bull. Pharm.,* 1916 (vol. xxx: pp. 276-78).
[67] 1907 (p. 176).

muscle. On the normal man, however, it is impossible to say how much of the action on the muscle is central and how much peripheral, but, as fatigue shows itself first by an action on the center, it is probable that the action of caffein in diminishing fatigue is mainly central. Caffein accelerates the pulse and slightly raises blood pressure. It has no action in any way resembling digitalis; by increasing the irritability of the cardiac muscle, its prolonged use rather tends to fatigue than to rest the heart.

Caffein and its allies form a very important group of diuretics. The urine is generally of a lower specific gravity than normal, since it contains a lesser proportion of salt and urea; but the total excretion of solids, both as regards urea, uric acid, and salts, is increased. Caffein, by exciting the medulla, produces an initial vaso-constriction of the kidneys, which tends at first to retard the flow of urine. So in recent years, other drugs have been introduced, allies of caffein, which act like it on the kidneys, but are without the stimulant action on the brain. Theobromine is such a drug.

Another authority states that[68]:

One of the most constant symptoms produced in man by over-doses of caffein is excessive diuresis, and experiments made upon the lower animals show that caffein acts as a diuretic not only by influencing the circulation, but also by directly affecting the secreting cells, the probabilities being in favor of the first of these theories of action. According to Schroeder, not only the water but also the solids of the urine are increased.

The question whether caffein has an influence upon tissue changes and the consequent nitrogenous elimination can not be considered as distinctly answered, though the most probable conclusion is that the action of caffein upon urea elimination and upon general nutrition is not direct or pronounced. While the therapeutic dose of caffein is broken up in the body with the formation of methylxanthin, which escapes with the urine, the toxic dose is at least in part eliminated by the kidney unchanged.

The metabolism of the methyl purins, of which group caffein is a member, appears to vary with the quantity ingested. The manner in which the methyl group is liberated by the cell protoplasm is said[69] to determine the amount of stimulus which the tissues receive from these substances. The xanthin group is almost without any excitatory action, and its metabolic end products are constant. Perhaps the variation in the excretions of unchanged methylpurins is dependent upon the amount of total reactive energy they invoke.

Baldi[70] found that caffein in small doses increases muscular excitability in dogs and frogs. The spinal and muscular hyperic excitability produced by caffein is, in his opinion, due to the methyl groups attached to the xanthin nucleus. Fredericq[71] states that caffein increases the irritability of the cardiac vagus and accelerates the appearance of pseudofatigue of the vagus which is produced by prolonged stimulation of the nerve. The action of caffein on the mammalian heart has also been investigated by Pilcher,[72] who found that, following the rapid intravenous injection of caffein, there is an acute fall of blood pressure; and with a maximal quantity of caffein, 10 milligrams per kilogram, the cardiac volume and the amplitude of the excursions are usually unchanged. With larger quantities, the volume progressively increases and the amplitude of the excursion decreases.

Salant[73] found that the intravenous injection of 15 to 25 milligrams of caffein per kilogram in animals was followed by a fall of blood pressure amounting to 7 to 35 per cent in most cases, which was transitory, although in some animals it remained unchanged. A moderate rise was rarely observed. Caffein aids the action of nitrates, acetanilid, ethyl alcohol and amyl alcohol, and increases the toxicity of barium chlorid. In a very thorough study of the toxicity of caffein which he made with Reiger,[74] a greater toxicity of about 15 to 20 percent by subcutaneous injection than by mouth, and but about one-half this when injected peritoneally, was found. Intramuscularly the toxicity is 30 percent greater than subcutaneously. In making the tests on animals, they found that individuality, season, age, species, and certain pathological conditions caused variation in the toxic effect of the administered caffein. Low protein diet tends to decrease resistance to caffein in dogs, and a milk or meat diet does the same for growing dogs. Caffein is not cumulative for the rabbit or dog.

As a result of experiments on the action of caffein on the bronchiospasm caused by peptone (Witte), silk peptone, B-imidoazolyl-ethylamin, curare, vasodilation, and mucarin, Pal[75] concluded that caffein stimulates certain branches of the peripheral sympathetic and is thus enabled to widen the bronchi or remove bronchiospasm.

According to Lapicque[76], caffein produces a change in the excitability of the medulla of the frog similar to that produced by rais-

[68] *U. S. Dispensatory*, 19th ed. (p. 253).
[69] Hall. I. W. *The Purin Bodies of Food Stuffs*, 1904 (p. 98).
[70] *Terapia moderna*, Dec., 1891.
[71] *Arch. intern. physiol.* (vol. xiii: pp. 107-14).
[72] *J. Pharmachol.* (vol. iii: p. 609).
[73] *J. Pharmachol.* (vol. iii: p. 468).
[74] *J. Pharmachol.* (vol. iii: p. 455).
[75] *Wien. Deut. med. Wochenschr.* (vol. xxxviii: pp. 1774 76).
[76] *Comp. rend. soc. biol.* (vol. lxxiv: p. 32).

ing the temperature of the nerve centers. Schürhoff[77] has pointed out that the continued use of large quantities of caffein will produce cardiac irregularity and sleeplessness.

Cochrane[78] cited three cases where caffein was hypodermically administered in cases of acute indigestion, etc., and concluded that the cases prove that caffein, or a compound containing it as a synergist, does indirectly make the injection of morphia a safe proceeding, and directly increases the force of the heart and arterial tension. However, Wood[79] found that medium doses of caffein do not produce any marked rise in blood pressure, and cause a reduction in pulse rate. He attributes the contradictory results which prior investigations gave, to employment of unusually large doses and to inaccurate experimental methods.

Caffein was found by Nonnenbruch and Szyszka[80] to have a slight action toward accelerating the coagulation time of the blood, being active over several hours. It inhibits coagulation *in vitrio*. Its action in the body apparently rests on an increase of the fibrin ferment. There is no reason to believe that the behavior is dependent on a toxic action, but there is probably an action on the spleen; for in several rabbits from which the spleen was removed, no action was observed.

Experiments conducted by Levinthal[81] gave no positive information as to the formation of uric acid from caffein in the human organism. The elimination of caffein has also been studied by Salant and Reiger[82], who found that larger amounts of caffein are demethylated in carnivora than in herbivora, and resistance to caffein is inversely as demethylation, caffein being much more toxic in the former class. In a similar investigation, Zenetz[83] observed that caffein is very slightly eliminated from the system by the kidneys, and that its action on the heart is cumulative; therefore he concludes that it is contra-indicated in all renal diseases, in arterio-sclerosis, and in cardiac affections secondary to them. The inaccuracy of these conclusions regarding the non-elimination of caffein and those of Albanese,[84] Bondzynski and Gottlieb[85], Leven[86], Schurtzkwer[87], and Minkowski[88], has been shown by Mendel and Wardell[89], who point out that many of these experimenters worked with dogs, in which the chief end-product of purin metabolism is not uric acid, but allantoin. They observe that the increase in excretion of uric acid after the addition of caffein to the diet seems to be proportional to the quantity of caffein taken, and equivalent to from 10 to 15 per cent of the ingested caffein. The remainder of the caffein is probably eliminated as mono-methylpurins.

Regarding the alleged cumulative action of caffein, Pletzer[90], Liebreich,[91] Szekacs[92], Pawinski,[93] and Seifert[94] all concluded from their investigations that the action of caffein is usually of brief duration, and does not have a cumulative effect, because of its rapid elimination; so that there is no danger of intoxication.

Dr. Oswald Schmiedeberg says:

> Caffein is a means of refreshing bodily and mental activity, so that this may be prolonged when the condition of fatigue has already begun to produce restraint, and to call for more severe exertion of the will, a state which, as is well known, is painful or disagreeable.
>
> This advantageous effect, in conditions of fatigue, of small quantities of caffein, as it is commonly taken in coffee or tea, might, however, by continued use become injurious, if it were in all cases necessarily exerted; that is to say, if by caffein the muscles and nerves were directly spurred on to increased activity. This is not the case, however, and just in this lies the peculiarity of the effect in question. The muscles and the simultaneously-acting nerves only under the influence of caffein respond more easily to the impulse of the will, but do not develop spontaneous activity; that is, without the co-operation of the will.
>
> The character of caffein action makes plain that these food materials do not injure the organism by their caffein content, and do not by continued use cause any chronic form of illness.

According to Dr. Hollingworth's[95] deductions, caffein is the only known stimulant that quickens the functions of the human

[77] *D. A. Apoth.-Ztg.*, 1911-12 (vol. xxxii: p. 4).
[78] *Med. Record, N. Y.*, 1916 (vol. xxx: p. 68).
[79] *Therap. Gazette*. 1912 (vol. xxxvi: pp. 6-13).
[80] *Deut. Arch. Klin. Med.*, 1920 (vol. cxxxiv: pp. 174-84).
[81] *Z. physiol. Chem.* (vol. lxxvii: p. 259).
[82] *Bull. Bur. of Chem.* (no. 157).
[83] *Pharm. J.*, Mar. 31, 1900, through *Brit. Med. J., Epit.*, 1900 (vol. i: p. 35).
[84] *Arch. f. exper. Path. u. Pharmakol.*, 1895 (vol. xxxv: p. 449).
[85] *Ibid.*, 1895 (vol. xxxvi: p. 45). *Ibid*, 1896 (vol. xxxvii: p. 385).
[86] *Arch. de physiol. norm. et path.*, 1868 (vol. i: p. 179).
[87] *Inaug. Diss.*, Konigsberg, 1882.
[88] *Arch. f. exper. Path. u. Pharmakol*, 1898 (vol. xli: p. 375).
[89] *Jour. Am. Med. Assoc.*, 1917 (vol. lxviii: pp. 1805-07).
[90] *Berliner Klin. Wochenschrift*, 1889 (no. 40).
[91] *Encyc. der Therapie*, 1896 (vol. i).
[92] Pester, *Med.-Chir. Presse*, 1885 (no. 39). *Orvosi Hetilap*, 1885 (nos. 32-33).
[93] *Zeitschrift f. Klin. Med.*, 1893 (vol. xxiii).
[94] *Mitt. aus der Wurzburger Med. Klinik*, 1885 (vol. i).
[95] *New York Herald*, Mar. 24. 1912.

body without a subsequent period of depression. His explanation for this behavior is that "caffein acts as a lubricator for the nervous system, having an actual physical action whereby the nerves are enabled to do their work more easily. Other stimulants act on the nerves themselves, causing a waste of energy, and consequently, according to nature's law, a period of depression follows, and the whole process tends to injure the human machine." In not a single instance during his experiments at Columbia University did depression follow the use of caffein.

Of course, caffein, like any other alkaloid, if used to excess will prove harmful, due to the over-stimulation induced by it. However, taken in moderate quantities, as in coffee and tea by normal persons, the conclusions of Hirsch[96] may be taken as correct, namely: caffein is a mild stimulant, without direct effect on the muscles, the effect resulting from its own destruction and being temporary and transitory; it is not a depressant either initially or eventually; and is not habit-forming but a true stimulant, as distinguished from sedatives and habit-forming drugs.

Caffein and Mental and Motor Efficiency

The literature on the influence of caffein on fatigue has been summarized, and the older experiments clearly pointed out, by Rivers[97]. A summary of the most important researches which have had as their object the determination of the influence of caffein on mental and motor processes has been made by Hollingworth[98], from whose monograph much of the following material has been taken.

Increase in the force of muscular contractions was demonstrated in 1892 by De Sarlo and Barnardini[99] for caffein and by Kraepelin for tea. These investigators used the dynamometer as a measure of the force of contraction; however, most of the subsequent work on motor processes has been by the ergographic method. Ugolino Mosso[100], Koch[101], Rossi[102], Sobieranski[103], Hoch and Kraepelin,[104] Destree,[105] Benedicenti,[106] Schumberg,[107] Hellsten,[108] and Joteyko,[109] have all observed a stimulating effect of caffein on ergographic performance. Only one investigation of those reported by Rivers failed to find an appreciable effect, that of Oseretzkowsky and Kraepelin,[110] while Feré[111] affirms that the effect is only an acceleration of fatigue.

In spite of the general agreement as to the presence of stimulation there is some dissension regarding whether only the height of the contractions or their number or both are affected. As might be expected from the great diversity of methods employed, the quantitative results also have varied considerably. Carefully controlled experiments by Rivers and Webber[112] "confirm in general the conclusion reached by all previous workers that caffein stimulates the capacity for muscular work; and it is clear that this increase is not due to the various psychical factors of interest, sensory stimulation, and suggestion, which the experiments were especially designed to exclude. The greatest increase . . . falls, however, far short of that described by some previous workers, such as Mosso; and it is probable that part of the effect described by these workers was due to the factors in question."

Investigations of mental processes under the influence of caffein have been much less frequent, most notable among which are those of Dietl and Vintschgau,[113] Dehio,[114] Kraepelin and Hoch,[115] Ach,[116] Langfeld,[117] and Rivers.[118] Kraepelin[119] observes: "We know that tea and coffee increase our mental efficiency in a definite way, and we use these as a means of overcoming mental fatigue . . . In the morning these drinks remove the last traces of sleepiness and in the evening when we still have intellectual tasks to dispose of they aid in keeping us awake." Their use induces a greater briskness and clearness of thought, after

[96] *Tea & Coffee Trade Jour.*, 1914 (vol. xxvi: pp. 537-41).
[97] *The Influence of Alcohol and Other Drugs on Fatigue.*
[98] "The Influence of Caffeine on Mental and Motor Efficiency." *Archives of Psychology*, 1912 (no. 22).
[99] *Revista sper. di Freniatria* (vol. xviii: p. 1).
[100] *Archiv. ital. de Biol.*, 1893 (vol. xix: p. 241).
[101] *Inaug. Diss.*, Marburg, 1894.
[102] *Revista sper. di Freniatria*, 1894 (vol. xx: p. 458).
[103] *Centralbl. f. Physiol.*, 1896 (vol. x: p. 126).
[104] *Psychol. Arbeit.*, 1896 (vol. 1: p. 378).
[105] *Jour. Med. de Bruxelles*, 1897.
[106] *Moleschott's Untersuchungen*, 1899 (vol. xvi: p. 170).
[107] *Archiv. f. Anat. u. Physiol. (Physiol. Abth.), Suppl. Bd.*, 1899 (p. 289).
[108] *Skand. Arch. f. Physiol.*, 1904 (vol. xvi: p. 197).
[109] *Travaux du Lab. de Physiol. Inst. Solvay*, 1904 (vol. vi: p. 361).
[110] *Psychol. Arbeit.*, 1901 (vol. iii: p. 617).
[111] *C. R. de la Soc. de Biol. Paris*, 1901 (pp. 593-627).
[112] *Op. Cit.* (p. 38). (See 97.)
[113] *Pflügers Archiv.*, 1877 (vol. xvi: p. 316).
[114] *Diss.*, Dorpat., 1887.
[115] *Psychol. Arbeit.*, 1896 (vol. 1: p. 431).
[116] *Psychol. Arbeit.*, 1901 (pp. 203-289).
[117] *Psychol. Rev.*, 1911 (vol. xviii: p. 424).
[118] *Op. Cit.* (see 97).
[119] *Ueber die Beeinflüssung einfacher psychischer Vorgänge durch einige Arzeneimittel* (p. 224).

which secondary fatigue is either entirely absent or is very slight.

Tendency toward habituation of the pyschic functions to caffein has been studied by Wedemeyer[120], who found that in the regular administration of it in the course of four to five weeks there is a measurable weakening of its action on psychic processes.

Rivers[121], who seems to have been the first to appreciate fully the genuine and practical importance of thoroughly controlling the psychological factors that are likely to play a rôle in such experiments, concludes that "caffein increases the capacity for both muscular and mental work, this stimulating action persisting for a considerable time after the substance has been taken without there being any evidence, with moderate doses, of reaction leading to diminished capacity for work, the substance thus really diminishing and not merely obscuring the effects of fatigue."

Subsequent to these investigations was that of Hollingworth[122] which is at once the most comprehensive, carefully conducted, and scientifically accurate one yet performed. He employed an ample number of subjects in his experimentation; and both his subjects, and the assistants who recorded the observations. were in no wise cognizant of the character or quantity of the dose of caffein administered, the other experimental conditions being similarly rigorous and extensive.

The purpose of his study was to determine both qualitatively and quantitatively the effect of caffein on a wide range of mental and motor processes, by studying the performance of a considerable number of individuals for a long period of time, under controlled conditions; to study the way in which this influence is modified by such factors as the age, sex, weight, idiosyncrasy, and previous caffein habits of the subjects, and the degree to which it depends on the amount of the dose and the time and conditions of its administration; and to investigate the influence of caffein on the general health, quality and amount of sleep, and food habits of the individual tested.

To obtain this information the chief tests employed were the steadiness, tapping, coordination, typewriting, color-naming, calculations, opposites, cancellation, and discrimination tests, the familiar size-weight illusion, quality and amount of sleep, and general health and feeling of well-being. A brief review of the results of these tests is given in the tabular summary.

From these Hollingworth concluded that caffein influenced all the tests in a given group in much the same way. The effect on motor processes comes quickly and is transient, while the effect on higher mental processes comes more slowly and is more persistent. Whether this result is due to quicker reaction on the part of motor-nerve centers, or whether it is due to a direct peripheral effect on the muscle tissue is uncertain, but the indications are that caffein has a direct action on the muscle tissue, and that this effect is fairly rapid in appearance. The two principal factors which seem to modify the degree of caffein influence are *body weight* and *presence of food* in the stomach at the time of ingestion of the caffein. In practically all of the tests the magnitude of the caffein influence varied inversely with the body weight, and was most marked when taken on an empty stomach or without food substance. This variance in action was also true for both

EFFECT OF CAFFEIN ON MENTAL AND MOTOR PROCESSES
Schematic Summary of All Results
St. = Stimulation. 0 = No effect. Ret. = Retardation.

Process	Tests	PRIMARY EFFECT Small Doses	Medium Doses	Large Doses	Secondary Reaction	Action Time Hours	Duration in Hours
Motor speed	1. Tapping	St.	St.	St.	None	.75 - 1.5	2 - 4
Coordination	2. Three-hole	St.	0	Ret.	None	1 - 1.5	3 - 4
	3. Typewriting						
	(a) Speed	St.	0	Ret.	None	Results show only in total day's work	
	(b) Errors	Fewer for all doses			None		
Association	4. Color-naming	St.	St.	St.	None	2 - 2.5	3 - 4
	5. Opposites	St.	St.	St.	None	2.5 - 3	Next day
	6. Calculation	St.	St.	St.	None	2.5	Next day
Choice	7. Discrimination reaction time.	Ret.	0	St.	None	2 - 4	Next day
	8. Cancellation	Ret.	?	St.	None	3 - 5	No data
	9. S-W illusion	0	0	0			
General	10. Steadiness	?	Unsteadiness		None	1 - 3	3 - 4
	11. Sleep quality	Individual differences depending on body weight and conditions of administration					
	12. Sleep quantity					2 ?	
	13. General health						

[120] *Arch. exp. Path. Pharm.*, 1920 (vol. lxxxv: pp. 339-58).
[121] *Op. cit.* (p. 50). (See 97.)
[122] *Loc. cit.* (see 95).

the quality and amount of sleep, and seemed to be accentuated when taken on successive days; but it did not appear to depend on the age, sex, or previous caffein habits of the individual. Those who had given up the use of caffein-containing beverages during the experiment did not report any craving for the drinks as such, but several expressed a feeling of annoyance at not having some sort of a warm drink for breakfast.

It is interesting to note that he also found a complete absence of any trace of secondary depression or of any sort of secondary reaction consequent upon the stimulation which was so strikingly present in many of the tests. The production of an increased capacity for work was clearly demonstrated, the same being a genuine drug effect, and not merely the effect of excitement, interest, sensory stimulation, expectation, or suggestion. However, this study does not show whether this increased capacity comes from a new supply of energy introduced or rendered available by the drug action, or whether energy already available comes to be employed more effectively, or whether fatigue sensations are weakened and the individual's standard of performance thereby raised. But they do show that from a standpoint of mental and productive physical efficiency "the widespread consumption of caffeinic beverages, even under circumstances in which and by individuals for whom the use of other drugs is stringently prohibited or decried, is justified."

Conclusion

Brief summarization of the information available on the pharmacology of coffee indicates that it should be used in moderation, particularly by children, the permissible quantity varying with the individual and ascertainable only through personal observation. Used in moderation, it will prove a valuable stimulant increasing personal efficiency in mental and physical labor. Its action in the alimentary régime is that of an adjuvant food, aiding digestion, favoring increased flow of the digestive juices, promoting intestinal peristalsis, and not tanning any portion of the digestive organs. It reacts on the kidneys as a diuretic, and increases the excretion of uric acid, which, however, is not to be taken as evidence that it is harmful in gout. Coffee has been indicated as a specific for various diseases, its functions therein being the raising and sustaining of low vitalities. Its effect upon longevity is virtually *nil.* A small proportion of humans who are very nervous may find coffee undesirable; but sensible consumption of coffee by the average, normal, non-neurasthenic person will not prove harmful but beneficial.

CHAPTER XIX

THE COMMERCIAL COFFEES OF THE WORLD

The geographical distribution of the coffees grown in North America, Central America, South America, the West India Islands, Asia, Africa, the Pacific Islands, and the East Indies — A statistical study of the distribution of the principal kinds — A commercial coffee chart of the world's leading growths, with market names and general trade characteristics

A STUDY of the geographical distribution of the coffee tree shows that it is grown in well-defined tropical limits. The coffee belt of the world lies between the tropic of cancer and the tropic of capricorn. The principal coffee consuming countries are nearly all to be found in the north temperate zone, between the tropic of cancer and the arctic circle.

The leading commercial coffees of the world are listed in the accompanying commercial coffee chart, which shows at a glance their general trade character. The cultural methods of the producing countries are discussed in chapter XX; statistics in chapter XXII; and the trade characteristics, in detail, in chapter XXIV, which considers also countries and coffees not so important in a commercial sense. Mexico is the principal producing country in the northern part of the western continent, and Brazil in the southern part. In Africa, the eastern coast furnishes the greater part of the supply; while in Asia, the Netherlands Indies, British India, and Arabia lead.

Within the last two decades there has been an expansion of the production areas in South America, Africa, and in southeastern Asia; and a contraction in British India and the Netherlands Indies.

The Shifting Coffee Currents of the World

Seldom does the coffee drinker realize how the ends of the earth are drawn upon to bring the perfected beverage to his lips. The trail that ends in his breakfast cup, if followed back, would be found to go a devious and winding way, soon splitting up into half-a-dozen or more straggling branches that would lead to as many widely scattered regions. If he could mount to a point where he could enjoy a bird's-eye view of these and a hundred kindred trails, he would find an intricate criss-cross of streamlets and rivers of coffee forming a tangled pattern over the tropics and reaching out north and south to all civilized countries. This would be a picture of the coffee trade of the world.

It would be a motion picture, with the rivulets swelling larger at certain seasons, but seldom drying up entirely at any time. In the main the streamlets and rivers keep pretty much the same direction and volume one year after another, but then there is also a quiet shifting of these currents. Some grow larger, and other diminish gradually until they fade out entirely. In one of the regions from which they take their source a tree disease may cause a decline; in another, a hurricane may lay the industry low at one quick stroke; and in still another, a rival crop may drain away the life-blood of capital. But for the most part, when times are normal, the shift is gradual; for international trade is conservative, and likes to run where it finds a well-worn channel.

In recent times, of course, the big disturbing element in the coffee trade was the World War. Whole countries were cut out of the market, shipping was drained away from every sea lane, stocks were piled high in exporting ports, prices were fixed, imports were sharply restricted, and the whole business of coffee trading was thrown out of joint. To what extent has the world returned to normal in this trade? Were the stoppages in trade merely temporary suspensions, or are they to prove permanent? How are the old, long-worn channels filling up again, now that the dams have been taken away?

We are now far enough removed from the war to begin to answer these questions. We find our answer in the export figures of the chief producing countries, which for the most part are now available in detail for one or two post-war years. These figures are given in the tables below; and for comparison, there are also given figures showing the distribution of exports in 1913 and in an earlier year near the beginning of the century. These figures, of course, do not necessarily give an accurate index to normal trade; as in any given year some abnormal happening, such as an exceptionally large crop or a revolution, may affect exports drastically as compared with years before and after. But normally the proportions of a country's exports going to its various customers are fairly constant one year after another, and can be taken for any given year as showing approximately the coffee currents of that period.

The figures following are for the calendar year unless the fiscal year is indicated. Where figures could not be obtained from the original statistical publications, they have been supplied as far as possible from consular reports.

BRAZIL. The war naturally increased the dependence of Brazil on its chief customer, and the proportion of the total crop coming to this country since the war has continued to be large. Shipments to United States ports in 1920 represented about fifty-four percent of the total exports. Figures for that year indicate also that France and Belgium were working back to their normal trade; but that Spain, Great Britain, and the Netherlands were taking much less coffee than in the year just before the war. Germany was buying strongly again, her purchases of 72,000,000 pounds being about half as much as in 1913. Shipments to Italy were four times as heavy as in 1913. The natural return to normal was much interfered with by speculation and valorization. Brazil seems to have come through the cataclysmic period of the war in better style than might have been expected.

COFFEE EXPORTS FROM BRAZIL

Exported to	1900 Pounds	1913 Pounds	1920 Pounds
United States..	566,686,345	650,071,337	826,425,340
France	78,408,862	244,295,282	203,694,212
Great Britain.	6,442,739	32,559,715	9,597,378
Germany	235,131,881	246,767,144	72,196,934
Aus.-Hungary .	71,696,556	134,495,310	
Netherlands ..	102,711,887	196,169,240	49,760,767
Italy	17,559,107	31,364,656	132,543,798
Spain	868,617	14,407,906	6,057,833
Belgium	41,500,638	58,858,562	42,309,469
Other countries.	59,432,882	145,896,327	181,796,919
Total	1,180,439,514	1,754,885,479	1,524,382,650

The 1900 figures are for the ports of Ric, Santos, Bahia, and Victoria.

"Other countries" in 1913 included Argentina, 32,941,182 pounds; Sweden, 28,045,737 pounds; Cape Colony, 15,930,731 pounds; Denmark, 6,252,931 pounds. In 1920 they included Argentina, 37,736,498 pounds; Sweden, 51,026,591 pounds; Denmark, 18,764,483 pounds; Cape Colony, 26,936,653 pounds.

VENEZUELA. Venezuela's coffee trade was deeply affected by the war; both because the Germans were prominent in the industry, and because the regular shipping service to Europe was discontinued. Large amounts of coffee were piled up at the ports and elsewhere; and when the restrictions were swept away in 1919, an abnormal exportation resulted. Although Germany had been one of the chief buyers before the war, Venezuela was by no means dependent on the German market. In fact, her combined shipments to France and the United States, just before the war, were three times as great as her exports to Germany. These two countries took two-thirds of her total exports in 1920. Spain and the Netherlands were also prominent buyers.

COFFEE EXPORTS FROM VENEZUELA

Exported to	1906 Pounds	1913 Pounds	1920 Pounds
United States.	35,704,398	45,570,268	43,670,191
France	21,748,370	46,413,174	4,647,978
Germany	5,270,814	32,203,972	546,363
Aus.-Hungary .	289,851	3,015,723	
Spain	3,133,012	7,372,839	15,210,756
Netherlands ..	28,549,920	2,903,806	1,836,209
Italy	315,293	2,805,948	719,850
Great Britain..	404,720	98,796	1,518,175
Other countries	2,663,507	1,631,143	5,577,110
Total	98,079,885	142,015,669	73,726,632

COLOMBIA. Colombian statistics of foreign trade are issued very irregularly, and

COMMERCIAL COFFEE CHART

The World's Leading Growths, with Market Names and General Trade Characteristics

Grand Division	*Country*	*Principal Shipping Ports*	*Best Known Market Names*	*Trade Characteristics*
North America	Mexico	Vera Cruz	Coatepec Huatusco Orizaba	Greenish to yellow bean; mild flavor.
Central America	Guatemala	Puerto Barrios	Coban Antigua	Waxy, bluish bean; mellow flavor.
	Salvador	La Libertad	Santa Ana Santa Tecla	Smooth, green bean; neutral flavor.
	Costa Rica	Puerto Limon	Costa Ricas	Blue-greenish bean; mild flavor.
West Indies	Haiti	Cape Haitien	Haiti	Blue bean; rich, fairly acid; sweet flavor.
	Santo Domingo	Santo Domingo	Santo Domingo	Flat, greenish-yellow bean; strong flavor.
	Jamaica	Kingston	Blue Mountain	Bluish-green bean; rich, full flavor.
	Porto Rico	Ponce	Porto Ricans	Gray-blue bean; strong, heavy flavor.
South America	Colombia	Savanilla	Medellin Manizales, Bogota Bucaramanga	Greenish-yellow bean; rich, mellow flavor.
	Venezuela	La Guaira Maracaibo	Merida Cucuta Caracas	Greenish-yellow bean; mild, mellow flavor.
	Brazil	Santos	Santos	Small bean; mild flavor.
		Rio de Janeiro	Rio	Large bean; strong cup.
Asia	Arabia	Aden	Mocha	Small, short, green to yellow bean; unique, mild flavor.
	India	Madras Calicut	Mysore Coorg (Kurg)	Small to large, blue-green bean; strong flavor.
East India Islands	Malay States	Penang (Geo't'n) Singapore	Straits Liberian, Robusta	Liberian and Robusta growths from Malaysia.
	Sumatra	Padang	Mandheling Ankola Ayer Bangies	Large, yellow to brown bean; heavy body; exquisite flavor.
	Java	Batavia	Preanger Cheribon, Kroe	Small, blue to yellow bean; light in cup.
	Celebes	Menado Macassar	Minahassa	Large, yellow bean; aromatic cup.
Africa	Abyssinia	Jibuti	Harar Abyssinia	Large, blue to yellow bean; very like Mocha.
Pacific Islands	Hawaiian Islands	Honolulu	Kona Puna	Large, blue, flinty bean; mildly acid.
	Philippines	Manila	Manila	Yellow and brown large bean; mild cup.

no figures are available to afford comparison between pre-war and post-war trade. The figures below, however, will show the comparative amounts of coffee going to the chief buying countries at different periods. From these it will be seen that the countries mainly interested in the trade in Colombian coffee are those prominent in the trade in other tropical American sections. England, France, Germany, and the United States took the great bulk of the exports. A consular report written after the outbreak of the war says:

Prior to the war the United States took about seventy percent of Colombia's coffee crop; the remainder being about equally divided between England, France, and Germany, with England taking the largest share.

COFFEE EXPORTS FROM COLOMBIA *
(From Barranquilla only)

Exported to	1899 Pounds	1905 Pounds	1916 Pounds
Great Britain.	22,573,828	7,268,429	442,026
France	6,873,722	496,120	1,685,454
Germany	9,348,028	8,568,131	.....
United States.	17,991,500	43,518,704	134,292,858
Other countries.....		7,396,385	23,753,678
Total	56,787,078	67,247,769	160,174,016

* These figures are taken from a consular report, which gave statistics only for the port of Barranquilla and did not include the total shipments from that port. Shipments from Cartagena, the only other exporting port of any consequence, amounted to 7,836,505 pounds, destination not stated. The Barranquilla figures, in the absence of official statistics, can be taken as fairly representative of the total trade so far as destination is concerned. They are for fiscal years, ending June 30.

"Other countries" in 1916 included Italy, 1,135,137 pounds; Venezuela, 20,564,321 pounds; Dutch West Indies, 400,132 pounds.

CENTRAL AMERICA. The three largest producing countries of Central America, Guatemala, Salvador, and Costa Rica, were all closely linked to Germany by the coffee trade before the war. German capital was heavily invested in coffee plantations; German houses had branches in the principal cities; and German ships regularly served the chief ports. Accordingly, when the blockade became effective, these countries were placed in a difficult position. But fortunately for them, a special effort had been made shortly before by Pacific-coast interests in the United States to divert a part of the coffee trade to San Francisco [1]. The market to the east being shut off, these countries turned naturally to the north. This trade with the United States has apparently been firmly established, and there has not yet been much of a return to German ports.

[1] See chapter XXX.

GUATEMALA. Of the three countries named, Guatemala was the most heavily involved in German trade. In 1913 she sent to Germany 53,000,000 pounds of coffee, a fifth more than in 1900. Her shipments of more than 10,000,000 pounds to the United Kingdom were about the same as at the beginning of the century. The war turned both these currents into United States ports, and they continued to flow in that direction through 1920. The figures follow:

COFFEE EXPORTS FROM GUATEMALA

Exported to	1900 Pounds	1913 Pounds	1920 Pounds
Germany	44,416,064	53,232,910	452,206
United States ...	14,057,120	21,188,444	78,226,508
United Kingdom.	11,467,680	10,666,604	2,341,217
Other countries..	3,041,584	6,641,936	13,185,638
Total	72,982,448	91,729,894	94,205,569

"Other countries" in 1913 included Austria-Hungary, 4,205,400 pounds; Netherlands, 407,900 pounds. In 1920, they included Netherlands, 10,355,625 pounds; Sweden, 422,421 pounds; Norway, 57,408 pounds; Spain, 97,519 pounds; France, 27,956 pounds.

SALVADOR. Salvador is one of the countries in which the publication of foreign-trade statistics has been irregular in the past, and none is available to show the full trade in coffee at the beginning of the century. A consular report gives figures for the first half of 1900. The most recent statistics show that the United States still holds much of the trade gained during the war, although Salvador is sending to Scandinavian countries many millions of pounds of her coffee that came to the United States in wartime.

COFFEE EXPORTS FROM SALVADOR

Exported to	1900 (1st 6 mos.) Pounds	1913 Pounds	1920 Pounds
United States.	6,700,101	10,779,655	46,262,256
France	22,948,712	15,955,920	6,686,714
Germany	6,607,892	12,120,133	813,166
Great Britain.	4,396,465	3,415,187	4,226,061
Italy	4,322,003	9,538,976	
Aus.-Hungary .	1,335,626	3,557,482	
Belgium	210,834	5,508	3,104
Spain	24,799	377,729	364,296
Other countries	3,920	7,193,107	24,509,071
Total	46,550,352	62,943,697	82,864,668

"Other countries" in 1913 included Norway, 2,070,220 pounds; Sweden, 2,238,332 pounds; Netherlands, 738,694 pounds; Chile, 609,441 pounds; Russia, 95,625 pounds; Denmark, 140,665 pounds. In 1920, they included Norway, 10,726,375 pounds; Chile, 1,772,346 pounds; Netherlands, 1,071,614 pounds; Sweden, 9,635,947 pounds; Denmark, 1,061,772 pounds.

A Flourishing Coffee Estate in Chiapas, Mexico

Laborers Bringing in the Day's Pickings, Near Bogota, Colombia

MILD-COFFEE CULTURE AND PREPARATION

COSTA RICA. English, French, and German capital was heavily invested in Costa Rica before the war, and all three nations were interested in the coffee trade. For many years England had maintained the lead as a coffee customer, and shipments continued in large volume after the war. The following figures are for the crop year ending September 30:

COFFEE EXPORTS FROM COSTA RICA

Exported to	1903 Pounds	1913 Pounds	1921 Pounds
United States ..	6,388,236	1,625,866	14,137,605
Great Britain.	27,756,661	23,464,827	13,418,527
France	1,241,816	741,548	313,538
Germany	2,676,841	2,581,055	376,649
Other countries	147,925	288,521	1,155,066
Total	38,211,479	28,701,817	29,401,385

In 1900 total shipments were 35,496,055 pounds, of which 20,587,712 pounds went to Great Britain: 8,874,014 pounds to the United States; and 3,904,566 pounds to Germany.

"Other countries" in 1903 included Spain, 49,189 pounds; Italy, 4,104 pounds. In 1921, they included Netherlands, 837,496 pounds; Spain, 308,308 pounds; Chile, 9,259 pounds.

MEXICO. Mexico has naturally sent most of her coffee across the border into the United States, and she continued to do so during and after the war. But she had worked up a very important trade with Europe, chiefly with Germany; and German capital, and German planters and merchants were prominent in the industry. France and England also were interested in the trade, and purchased annually several million pounds. During the war, as shown by the exports in its final year, this trade almost entirely ceased, and the United States and Spain remained as the only consumers of Mexican coffee. Details of the after-war trade are not yet available in published statistics. In the following table, 1900 and 1918 are calendar years, and 1913 is a fiscal year.

COFFEE EXPORTS FROM MEXICO

Exported to	1900 Pounds	1913 Pounds	1918 Pounds
United States.	28,882,954	28,012,655	23,816,044
Germany	10,074,001	10,461,382	
Aus.-Hungary .	163,934	30,864	
Belgium	25,855	39,722	
Spain	546,132	184,941	6,184,494
France	3,927,294	4,482,011	
Netherlands ...	220,607	46,296	
Great Britain.	3,848,605	2,170,669	
Cuba	467,201	37,921	171,527
Italy	157,653	347,758	
Other countries		655,073	
Total	48,314,236	46,469,292	30,172,065

In 1913 "other countries" included Panama, 342,131 pounds; Canada, 276,567 pounds; Sweden, 3,079 pounds; British Honduras, 33,179 pounds; Denmark, 112 pounds.

JAMAICA. The French, more than any other peoples in Europe, have cultivated a taste for coffee from the West Indies; and France normally has led all other countries in shipments from the larger producing islands, including Jamaica, although the island is a British possession. In the year before the war, France bought nearly 4,000,000 pounds of Jamaican coffee, more than half the total production. In the year 1900-01 also she took about 4,000,000 pounds, leading all other countries. This trade was very much cut down during the war, but was not wiped out. As shown in the figures for 1918, England largely took the place of France in that year, and Canada increased her purchases several hundred percent.

COFFEE EXPORTS FROM JAMAICA

Exported to	1901 (fis.yr.) Pounds	1913 Pounds	1918 Pounds
Great Britain.	1,849,456	671,440	6,919,808
Canada	109,536	263,872	1,819,328
United States.	2,976,512	802,032	643,888
France	3,958,304	3,743,264	729,120
Aus.-Hungary .	104,272	303,296	
Cuba	114,800		
Barbados		226,464	26,992
Other countries	508,704	507,248	97,440
Total	9,621,584	6,517,616	10,236,576

"Other countries" in 1901 included British West Indies, 316,512 pounds. In 1913, they included Netherlands, 125,216 pounds; Norway, 28,896 pounds; Sweden, 70,224 pounds; Italy, 46,592 pounds; Australia, 71,456 pounds.

HAITI. Prior to the taking over of the administration of the customs of Haiti by the United States, detailed statistics of the exports are almost wholly lacking. France took most of the annual production, continuing a trade that dated back to old colonial times. An American consular report says:

> Before the war there was no market for Haitian coffee in the United States, practically the entire crop going to Europe, with France as the largest consumer. However, there has been for some time past a determined effort made to create a demand in the United States, and this is said to be meeting with ever-increasing success.

The actual success achieved can be measured by the following figures for the fiscal year ended September 30, 1920:

COFFEE EXPORTS FROM HAITI

Exported to	Pounds
United States	27,647,077
France	23,921,083
Great Britain	39,583
Other countries	10,362,351
Total	61,970,094

These figures do not include 6,322,167 pounds of coffee triage, or waste, of which the United States took 2,028,352 pounds; France, 1,491,507 pounds.

DOMINICAN REPUBLIC. The comparatively small production of the Dominican Republic was divided among the United States and three or four European countries before the war. Since the war the exports have been scattered among the former customers in varying amounts. Germany is again a buyer, although her purchases have not come back to anything like the pre-war level.

COFFEE EXPORTS FROM THE DOMINICAN REPUBLIC

Exported to	1906 Pounds	1913 Pounds	1920 Pounds
United States.	564,291	506,456	529,831
France	569,215	1,248,418	454,165
Germany	1,562,193	327,843	69,224
Italy	*	195,294	51,543
Cuba	*	25,628	132,569
Great Britain.	*	660	54,114
Other countries	221,028	8,154	70,220
Total	2,916,727	2,312,453	1,361,666

*No shipments, or included in "other countries."

"Other countries" in 1920 included only the Netherlands.

PORTO RICO. In spite of several attempts on the part of Porto-Rican planters to make their product popular in the markets of the United States, the American consumer has never found the taste of that coffee to his liking. The big market for the Porto-Rican product has been Cuba, which has depended on her neighbor for most of her supply. This demand takes a large part of the annual crop, including the lower grades. The better grades, before the war, went largely to Europe, mostly to the Latin countries. During the war, the Cuban market carried the Porto-Rican planters through, although shipments of considerable size continued to go to France and Spain. Recovery of the pre-war trade with Europe, however, has been slow, Spain being the only country to take over 1,000,000 pounds in 1920. Shipments to that country totaled 3,472,204 pounds; those to France, 900,868 pounds. Both countries increased their purchases considerably in 1921.

COFFEE EXPORTS FROM PORTO RICO

Exported to	1900-01 (fis.yr.) Pounds	1913 Pounds	1921 Pounds
United States.	29,565	628,843	211,531
France	3,348,025	6,020,170	1,625,065
Spain	2,590,096	6,851,235	5,705,932
Aus.-Hungary	386,158	6,729,726	
Germany	493,891	876,315	363,993
Belgium	9,964	25,867	234,019
Italy	611,033	3,498,157	43,484
Netherlands	8,860	497,938	25,199
Sweden	32,390*	633,046	266,550
Cuba	4,633,538	23,179,690	21,135,397
Other countries	13,720	393,586	356,709
Total	12,157,240	49,334,573	29,967,879

*Includes Norway.

HAWAII. The war disarranged Hawaii's coffee trade very little, as she had for many years been shipping chiefly to continental United States. Recently a considerable trade with the Philippines has developed.

COFFEE EXPORTS FROM HAWAII

Exported to	1901-02 (fis.yr.) Pounds	1913 Pounds	1921 Pounds
United States.	1,082,994	3,393,009	4,183,046
Canada	77,900	10,200	11,355
Japan	24,155	49,167	23,950
Germany	2,100	1,612	
Philippines	*	932,640	747,700
Other countries	23,349	49,179	13,070
Total	1,210,498	4,435,807	4,979,121

*No exports, or included in "other countries."

ADEN. Lying on the edge of the war area and on the road to India, Aden felt the full force of the disarrangement of commercial traffic by the war. Ordinarily, Aden is not only the chief outlet for the coffee of the interior of Arabia — the original "Mocha" — but it is also the transhipping point for large amounts from Africa and India. The figures given below relate for the most part to this transhipped coffee. Exports of coffee from Aden go chiefly to the United Kingdom, France, and the United States, and to other ports of Arabia and Africa. Before the war no great proportion went to the Central Powers. The following figures apply to fiscal years ending March 31:

COFFEE EXPORTS FROM ADEN

Exported to	1901 (fis.yr.) Pounds	1914 (fis.yr.) Pounds	1921 (fis.yr.) Pounds
Great Britain.	1,563,632	696,976	466,928
United States.	2,412,368	4,300,128	2,507,344
France	3,789,296	2,975,840	814,016
Egypt	1,024,576		3,108,336
Arab. Gulf Pts.	860,160	852,320	606,592
Germany	247,184	465,136	
Aus.-Hungary	341,152	553,952	
Italy	197,568	811,664	7,504
Br. Somaliland	280,224	23,408	
*Africa	337,344	2,390,640	292,880
Other countries	1,114,848	2,500,456	1,659,504
Total	12,168,352	15,570,520	9,463,104

*Including adjacent islands, but exclusive of British territory.

"Other countries" in 1914 included Australia, 222,320 pounds; Perim, 142,016 pounds; Zanzibar, 148,848 pounds; Mauri-

tius, 154,672 pounds; Seychelles, 116,704 pounds; Sweden, 118,720 pounds; Norway, 49,168 pounds; Russia, 196,448 pounds. In 1921, they included Denmark, 120,624 pounds; Spain, 124,208 pounds; Massowah, 410,704 pounds.

BRITISH INDIA. As India's trade before the war was chiefly with the mother country, with France, and with Ceylon, the return to normal has been rapid. In the year following the war, these three customers were again credited with the largest amounts exported from India, except for shipments to Greece, which took little before the war. The following figures are for the fiscal years ending March 31:

COFFEE EXPORTS FROM BRITISH INDIA

Exported to	1901 (fis.yr.) Pounds	1914 (fis.yr.) Pounds	1920 (fis.yr.) Pounds
Great Britain.	15,678,768	10,343,536	8,138,144
Ceylon	1,088,528	1,428,112	1,423,072
France	8,430,016	10 924,816	9,256,352
Belgium	617,792	1,021,664	
Germany	126,560	1,033,088	25,312
Aus.-Hungary .	123,312	1,358,896	8,400
Italy	23,968	22,624	30,912
United States.	54,096		16,576
Turkey in Asia	232,176	501,984	986,720
*Africa	118,272	113,344	619,696
Other countries	1,106,784	2,360,736	10,021,648
Total	27,600,272	29,108,800	30,526,832

*Including adjacent islands.

"Other countries" in 1914 included Netherlands, 238,560 pounds; Australia, 748,608 pounds; Bahrein Islands, 757,568 pounds. In 1920, they included Greece, 6,487,376 pounds; Australia, 481,152 pounds; Bahrein Islands, 1,081,696 pounds; Aden and dependencies, 459,984 pounds; other Arabian ports, 890,176 pounds.

DUTCH EAST INDIES. The war played havoc with the coffee trade of the Dutch East Indies, taking away shipping, closing trade routes, and causing immense quantities of coffee to pile up in the warehouses. When the war ended, this coffee was released; and trade was consequently again abnormal, although in the opposite direction from that it took during war years. The 1920 figures indicate that the trade is working back into its old channels.

COFFEE EXPORTS FROM DUTCH EAST INDIES

Exported to	1900 Pounds	1913 Pounds	1920† Pounds
Netherlands ..	81,489,000	33,323,748*	*50,028,815
Great Britain.	88,000	981,201	5,987,598
France	2,560,000	9,081,715*	5,410,582
Aus.-Hungary .	1,153,000	996,988	
Germany	71,000	997,715*	75,699
Egypt	5,494,000	104,868	1,418,313
United States.	8,408,000	5,695,180	17,274,522
Singapore	9,952,000	4,785,580	8,349,415
Other countries	2,965,000	7,831,732	10,475,509
Total	112,180,000	63,798,727	99,020,453

*Includes shipments "for orders."
† These figures cover only Java and Madura.

"Other countries" in 1920 included, Norway, 2,606,421 pounds; Sweden, 728,580 pounds; Australia, 1,553,495 pounds; British India, 1,912,541 pounds; Italy, 1,964,109 pounds; Denmark, 1,191,643 pounds; Belgium, 166,092 pounds.

COFFEE TREE IN BEARING AT THE GOVERNMENTAL EXPERIMENT STATION AT LAMOA, NEAR MANILA, P. I.

Chapter XX

CULTIVATION OF THE COFFEE PLANT

The early days of coffee culture in Abyssinia and Arabia — Coffee cultivation in general — Soil, climate, rainfall, altitude, propagation, preparing the plantation, shade and wind breaks, fertilizing, pruning, catch crops, pests, and diseases — How coffee is grown around the world — Cultivation in all the principal producing countries

FOR the beginnings of coffee culture we must go back to the Arabian colony of Harar in Abyssinia, for here it was, about the fifteenth century, that the Arabs, having found the plant growing wild in the Abyssinian highlands, first gave it intensive cultivation. The complete story of the early cultivation of coffee in the old and new worlds is told in chapter II, which deals with the history of the propagation of the coffee plant.

La Roque[1] was the first to tell how the plant was cultivated and the berries prepared for market in Arabia, where it was brought from Abyssinia.

The Arabs raised it from seed grown in nurseries, transplanting it to plantations laid out in the foot-hills of the mountains, to which they conducted the mountain streams by ingeniously constructed small channels to water the roots. They built trenches three feet wide and five feet deep, lining them with pebbles to cause the water to sink deep into the earth with which the trenches were filled, to preserve the moisture from too rapid evaporation. These were so constructed that the water could be turned off into other channels when the fruit began to ripen. In plantations exposed to the south, a kind of poplar tree was planted along the trenches to supply needful shade.

La Roque noted that the coffee trees in Yemen were planted in lines, like the apple trees in Normandy; and that when they were much exposed to the sun, the shade poplars were regularly introduced between the rows.

Such cultivation as the plant received in early Abyssinia and Arabia was crude and primitive at best. Throughout the intervening centuries, there has been little improvement in Yemen; but modern cultural methods obtain in the Harar district in Abyssinia.

Like the Arabs in Yemen, the Harari cultivated in small gardens, employing the same ingenious system of irrigation from mountain springs to water the roots of the plants at least once a week during the dry season. In Yemen and in Abyssinia the ripened berries were sun-dried on beaten-earth barbecues.

The European planters who carried the cultivation of the bean to the Far East and to America followed the best Arabian practise, changing, and sometimes improving it, in order to adapt it to local conditions.

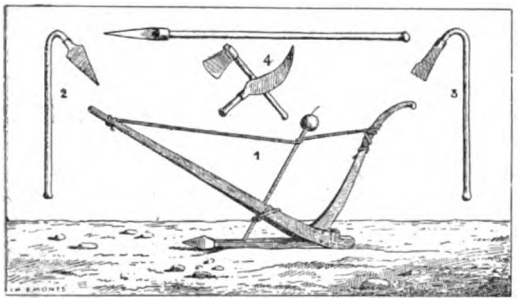
Coffee Cultivation in General

Today the commercial growers of coffee on a large scale practise intensive cultivation methods, giving the same care to preparing their plantations and maintaining their trees as do other growers of grains and fruits. As in the more advanced methods of arboriculture, every effort is made to obtain the maximum production of quality coffee consistent with the smallest outlay of money and labor. Experimental stations in various parts of the world are constantly working to improve methods and

[1] La Roque, Jean. *Voyage de l'Arabie Heureuse*, Paris. 1715. (p. 280.)

products, and to develop types that will resist disease and adverse climatic conditions.

While cultivation methods in the different producing countries vary in detail of practise, the principles are unchanging. Where methods do differ, it is owing principally to local economic conditions, such as the supply and cost of labor, machinery, fertilizers, and similar essential factors.



IMPLEMENTS USED IN EARLY ARABIAN COFFEE CULTURE
1, Plow. 2 and 3, Mattocks. 4, Hatchet and sickle. Top, Seeder implement

SOIL. Rocky ground that pulverizes easily — and, if possible, of volcanic origin — is best for coffee; also, soil rich in decomposed mold. In Brazil the best soil is known as *terra roxa,* a topsoil of red clay three or four feet thick with a gravel subsoil.

CLIMATE. The natural habitat of the coffee tree (all species) is tropical Africa, where the climate is hot and humid, and the soil rich and moist, yet sufficiently friable to furnish well drained seed beds. These conditions must be approximated when the tree is grown in other countries. Because the trees and fruit generally can not withstand frost, they are restricted to regions where the mean annual temperature is about 70° F., with an average minimum about 55°, and an average maximum of about 80°. Where grown in regions subject to more or less frost, as in the northernmost parts of Brazil's coffee-producing district, which lie almost within the south temperate zone, the coffee trees are sometimes frosted, as was the case in 1918, when about forty percent of the São Paulo crop and trees suffered.

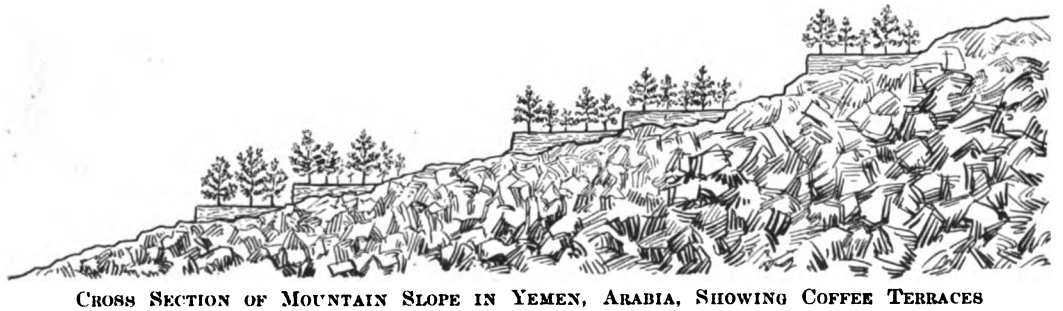
Generally speaking, the most suitable climate for coffee is a temperate one within the tropics; however, it has been successfully cultivated between latitudes 28° north and 38° south.

RAINFALL. Although able to grow satisfactorily only on well drained land, the coffee tree requires an abundance of water, about seventy inches of rainfall annually, and must have it supplied evenly throughout the year. Prolonged droughts are fatal; while, on the other hand, too great a supply of water tends to develop the wood of the tree at the expense of the flowers and fruit, especially in low-lying regions.

ALTITUDE. Coffee is found growing in all altitudes, from sea-level up to the frost-line, which is about 6,000 feet in the tropics. *Robusta* and *liberica* varieties of coffee do best in regions from sea-level up to 3,000 feet, while *arabica* flourishes better at the higher levels.

Carvalho says that the coffee plant needs sun, but that a few hours daily exposure is sufficient. Hilly ground has the advantage of offering the choice of a suitable exposure, as the sun shines on it for only a part of the day. Whether it is the early morning or the afternoon sun that enables the plant to attain its optimum conditions is a question of locality.

In Mexico, Romero tells us, the highlands of Soconusco have the advantage that the sun does not shine on the trees during the whole of the day. On the higher slopes of



CROSS SECTION OF MOUNTAIN SLOPE IN YEMEN, ARABIA, SHOWING COFFEE TERRACES
These miniature plantations are found chiefly along the caravan route between Hodeida and Sanaa

CLEARING VIRGIN FOREST FOR A COFFEE ESTATE IN MEXICO

COFFEE NURSERY UNDER A BAMBOO ROOF IN COLOMBIA

THE FIRST STEPS IN COFFEE GROWING

the Cordilleras — from 2,500 feet above sea-level — clouds prevail during the summer season, when the sun is hottest, and are frequently present in the other seasons, after ten o'clock in the morning. These keep the trees from being exposed to the heat of the sun during the whole of the day. Perhaps to this circumstance is due the superior excellence of certain coffees grown in Mexico, Colombia, and Sumatra at an altitude of 3,000 feet to 4,000 feet above sea-level.

Richard Spruce, the botanist, in his notes on South America, as quoted by Alfred Russel Wallace,[2] refers to "a zone of the equatorial Andes ranging between 4,000 and 6,000 feet altitude, where the best flavored coffee is grown."

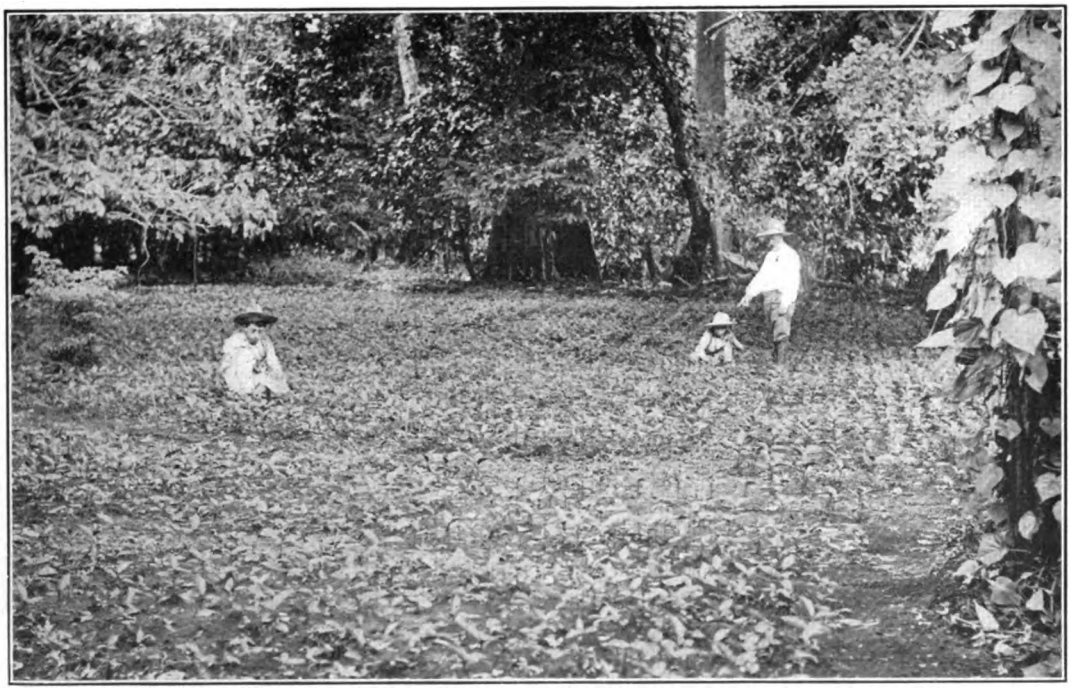
PROPAGATION. Coffee trees are grown most generally from seeds selected from trees of known productivity and longevity; although in some parts of the world propagation is done from shoots or cuttings. The seed method is most general, however, the seeds being either propagated in nursery beds, or planted at once in the spot where the mature tree is to stand. In the latter case — called planting at stake — four or five seeds are planted, much as corn is sown; and after germination, all but the strongest plant are removed.

Where the nursery method is followed, the choicest land of the plantation is chosen for its site; and the seeds are planted in forcing beds, sometimes called cold-frames. When the plants are to be transplanted direct to the plantation, the seeds are generally sown six inches apart and in rows separated by the same distance, and are covered with only a slight sprinkling of earth. When the plants are to be transferred from the first bed to another, and then to the plantation, the seeds are sown more thickly; and the plants are "pricked" out as needed, and set out in another forcing bed.

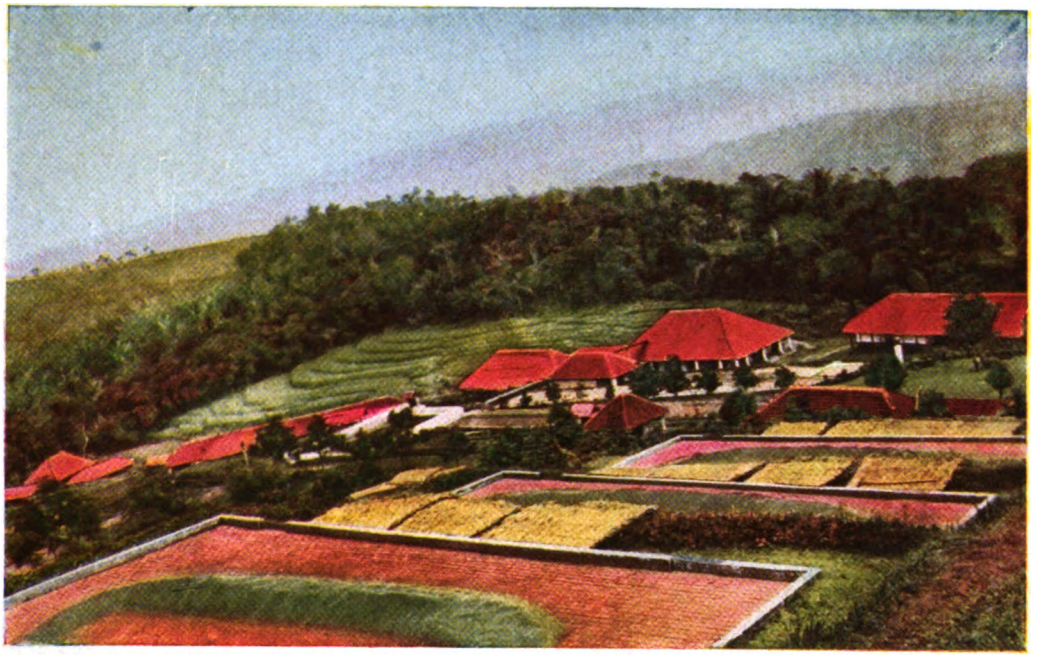
During the six to seven weeks required for the coffee seed to germinate, the soil must be kept moist and shaded and thoroughly weeded. If the trees are to be grown without shade, the young plants are gradually exposed to the sun, to harden them, before they begin their existence in the plantation proper.

Considerable experimental work has been done in renewing trees by grafting, notably

[2] *Encyclopedia Britannica*, 11 ed., Cambridge, 1910. (vol. 1: p. 118.)



COFFEE TREE NURSERY, PANAJABAL, POCHUTA, GUATEMALA



DRYING GROUNDS AND FACTORY IN THE PREANGER REGENCY

NATIVE TRANSPORT, FIELD TO FACTORY, AT DRAMAGA, NEAR BUITENZORG

COFFEE SCENES IN JAVA, NETHERLANDS EAST INDIES

COFFEE GROWING UNDER SHADE, PORTO RICO

in Java; but practically all commercial planters follow the seed method.

PREPARING THE PLANTATION. Before transplanting time has come, the plantation itself has been made ready to receive the young plants. Coffee plantations are generally laid out on heavily wooded and sloping lands, most often in forests on mountainsides and plateaus, where there is an abundance of water, of which large quantities are used in cultivating the trees and in preparing the coffee beans for market. The soil most suitable is friable, sandy, or even gravelly, with an abundance of rocks to keep the soil comparatively cool and well drained, as well as to supply a source of food by action of the weather. The ideal soil is one that contains a large proportion of potassium and phosphoric acid; and for that reason, the general practise is to burn off the foliage and trees covering the land and to use the ashes as fertilizer.

In preparing the soil for the new plantation under the intensive cultivation method, the surface of the land is lightly plowed, and then followed up with thorough cultivation. When transplanting time comes, which is when the plant is about a year old, and stands from twelve to eighteen inches high with its first pairs of primary branches, the plants are set out in shallow holes at regular intervals of from eight to twelve, or even fourteen, feet apart. This gives room for the root system to develop, provides space for sunlight to reach each tree, and makes for convenience in cultivating and harvesting. *Liberica* and *robusta* type trees require more room than *arabica*. When set twelve feet apart, which is the general practise, with the same distance maintained between rows, there are approximately four hundred and fifty trees to the acre. In the triangle, or hexagon, system the trees are planted in the form of an equilateral triangle, each tree being the same distance (usually eight or nine feet) from its six nearest neighbors. This system permits of 600 to 800 trees per acre.

SHADE AND WIND BREAKS. Strong, chilly winds and intensely hot sunlight are foes of coffee trees, especially of the *arabica* variety. Accordingly, in most countries it is customary to protect the plantation with wind-breaks consisting of rugged trees, and to shade the coffee by growing trees of other kinds between the rows. The shade trees serve also to check soil erosion; and in the case of the leguminous kinds, to furnish nutriment to the soil. Coffee does best in shade such as is afforded by the silk

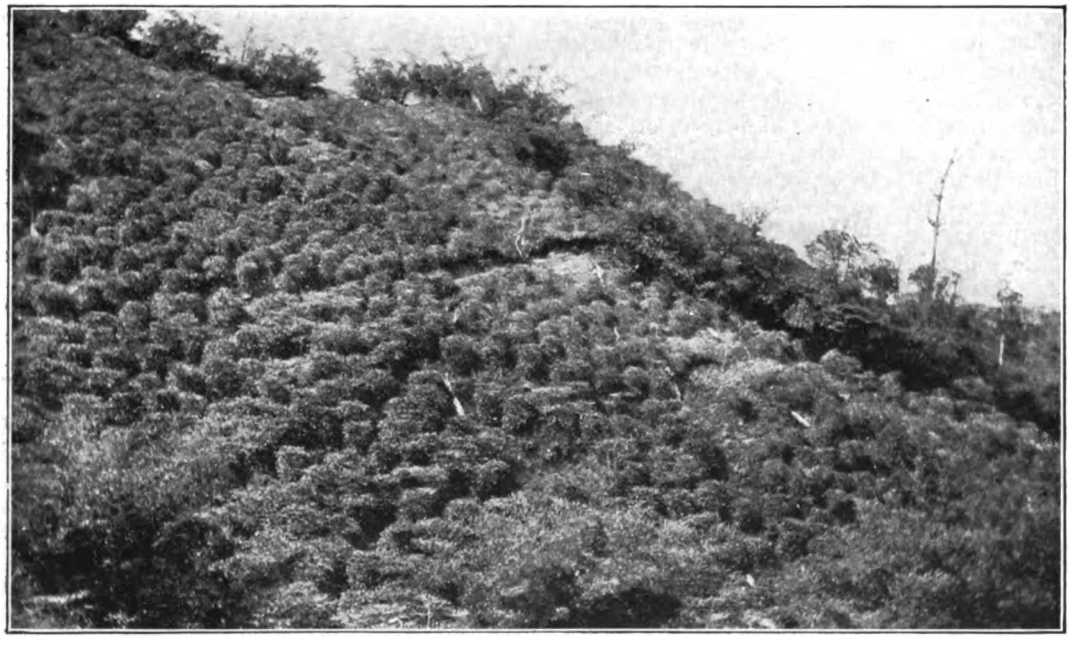
oak (*Grevillea robusta*). In *Shade in Coffee Culture* (*Bulletin* 25, 1901, division of botany, United States Department of Agriculture), O. F. Cook goes extensively into this subject.

The methods employed in the care of a coffee plantation do not differ materially from those followed by advanced orchardists in the colder fruit-belts of the world. After the young plants have gained their start, they are cultivated frequently, principally to keep out the weeds, to destroy pests, and to aerate the earth. The implements used range from crude hand-plows to horse-drawn cultivators.

FERTILIZING. Comparatively little fertilizing is done on plantations established on virgin soil until the trees begin to bear, which occurs when they are about three years of age. Because the coffee tree takes potash, nitrogen, and phosphoric acid from the soil, the scheme of fertilizing is to restore these elements. The materials used to replace the soil-constituents consist of stable manure, leguminous plants, coffee-tree prunings, leaves, certain weeds, oil cake, bone and fish meal, guano, wood ashes, coffee pulp and parchment, and such chemical fertilizers as superphosphate of lime, basic slag, sulphate of ammonia, nitrate of lime, sulphate of potash, nitrate of potash, and similar materials.

The relative values of these fertilizers depend largely upon local climate and soil conditions, the supply, the cost, and other like factors. The chemical fertilizers are coming into increasing use in the larger and more economically advanced producing countries. Brazil, particularly, is showing in late years a tendency toward their adoption to make up for the dwindling supply of the so-called natural manures. As the coffee tree grows older, it requires a larger supply of fertilizer.

PRUNING. On the larger plantations, pruning is an important part of the cultivation processes. If left to their own devices, coffee trees sometimes grow as high as forty feet, the strength being absorbed by the wood, with a consequent scanty production of fruit. To prevent this undesirable result, and to facilitate picking, the trees on the more modern plantations are pruned down to heights ranging from six to twelve feet. Except for pruning the roots when transplanting, the tree is permitted to grow until after producing its first full crop before any cutting takes place. Then, the branches are severely cut back; and thereafter, pruning is carried on



THE FAMOUS BOEKIT GOMPONG ESTATE, NEAR PADANG, ON SUMATRA'S WEST COAST
Showing the healthy, regular appearance of well-cultivated coffee bushes, twenty-six years old. Also note the line of feathery bamboo wind-breaks

COFFEE ESTATE IN ANTIOQUIA, COLOMBIA, SHOWING WIND-BREAKS

annually. Topping and pruning begin between the first and the second years.

Coffee trees as a rule produce full crops from the sixth to the fifteenth year, although some trees have given a paying crop until twenty or thirty years old. Ordinarily the trees bear from one-half pound to eight pounds of coffee annually, although there are accounts of twelve pounds being obtained per tree. Production is mostly governed by the cultivation given the tree, and by climate, soil, and location. When too old to bear profitable yields, the trees on commercial plantations are cut down to the level of the ground; and are renewed by permitting only the strongest sprout springing out of the stump to mature.

CATCH CROPS. On some plantations it has become the practise to grow catch crops between the rows of coffee trees, both as a means of obtaining additional revenue and to shade the young coffee plants. Corn, beans, cotton, peanuts, and similar plants are most generally used.

PESTS AND DISEASES. The coffee tree, its wood, foliage, and fruit, have their enemies, chief among which are insects, fungi, rodents (the "coffee rat"), birds, squirrels, and — according to Rossignon — elephants, buffalo, and native cattle, which have a special liking for the tender leaves of the coffee plant. Insects and fungi are the most bothersome pests on most plantations. Among the insects, the several varieties of borers are the principal foes, boring into the wood of the trunk and branches to lay *larvae* which sap the life from the tree. There are scale insects whose excretion forms a black mold on the leaves and affects the nutrition by cutting off the sunlight. Numerous kinds of beetles, caterpillars, grasshoppers, and crickets attack the coffee-tree leaves, the so-called "leaf-miner" being especially troublesome. The Mediterranean fruit fly deposits *larvae* which destroy or lessen the worth of the coffee berry by tunneling within and eating the contents of the parchment. The coffee-berry beetle and its grub also live within the coffee berry.

Among the most destructive fungoid diseases is the so-called Ceylon leaf disease, which is caused by the *Hemileia vastatrix*, a fungus related to the wheat rust. It was this disease which ruined the coffee industry in Ceylon, where it first appeared in 1869,

and since has been found in other coffee-producing regions of Asia and Africa. America has a similar disease, caused by the *Sphaerostilbe flavida,* that is equally destructive if not vigilantly guarded against. (See chapters XV and XVI.)

The coffee-tree roots also are subject to attack. There is the root disease, prevalent in all countries, and for which no cause has yet been definitely assigned, although it has been determined that it is of a fungoid nature. Brazil, and some other American coffee-producing countries, have a serious disease caused by the eelworm, and for that reason called the eelworm disease.

Coffee planters combat pests and diseases principally with sprays, as in other lines of advanced arboriculture. It is a constant battle, especially on the large commercial plantations, and constitutes a large item on the expense sheet.

Cultivation by Countries

Coffee-cultivation methods vary somewhat in detail in the different producing countries. The foregoing description covers the underlying principles in practise throughout the world; while the following is intended to show the local variations in vogue in the principal countries of production, together with brief descriptions of the main producing districts, the altitudes, character of soil, climate, and other factors that are peculiar to each country. In general, they are considered in the order of their relative importance as producing countries.

BRAZIL. In Brazil, the Giant of South America, and the world's largest coffee producer, the methods of cultivation naturally have reached a high point of development, although the soil and the climate were not at first regarded as favorable. The year 1723 is generally accepted as the date of the introduction of the coffee plant into Brazil from French Guiana. Coffee planting was slow in developing, however, until 1732, when the governor of the states of Pará and Maranhao urged its cultivation. Sixteen years later, there were 17,000 trees in Pará. From that year on, slow but steady progress was made; and by 1770, an export trade had been begun from the port of Pará to countries in Europe.

The spread of the industry began about this time. The coffee tree was introduced into the state of Rio de Janeiro in 1770. From there its cultivation was gradually

UP-TO-DATE WEEDING AND HARROWING, SAO PAULO

Photograph by Courtesy of J. Aron & Co.

GENERAL VIEW OF FAZENDA DUMONT, RIBEIRAO PRETO, SAO PAULO, BRAZIL

extended into the states of São Paulo, Minas Geraes, Bahia, and Espirito Santo, which have become the great coffee-producing sections of Brazil. The cultivation of the plant did not become especially noteworthy until the third decade of the nineteenth century. Large crops were gathered in the season of 1842-43; and by the middle of the century, the plantations were producing annually more than 2,000,000 bags.

Brazil's commercial coffee-growing region has an estimated area of approximately 1,158,000 square miles, and extends from the river Amazon to the southern border of the state of São Paulo, and from the Atlantic coast to the western boundary of the state of Matto Grosso. This area is larger than that section of the United States lying east of the Mississippi River, with Texas added. In every state of the republic, from Ceará in the north to Santa Catharina in the south, the coffee tree can be cultivated profitably; and is, in fact, more or less grown in every state, if only for domestic use. However, little attention is given to coffee-growing in the north, except in the state of Pernambuco, which has only about 1,500,000 trees, as compared, with the 764,000,000 trees of São Paulo in 1922.

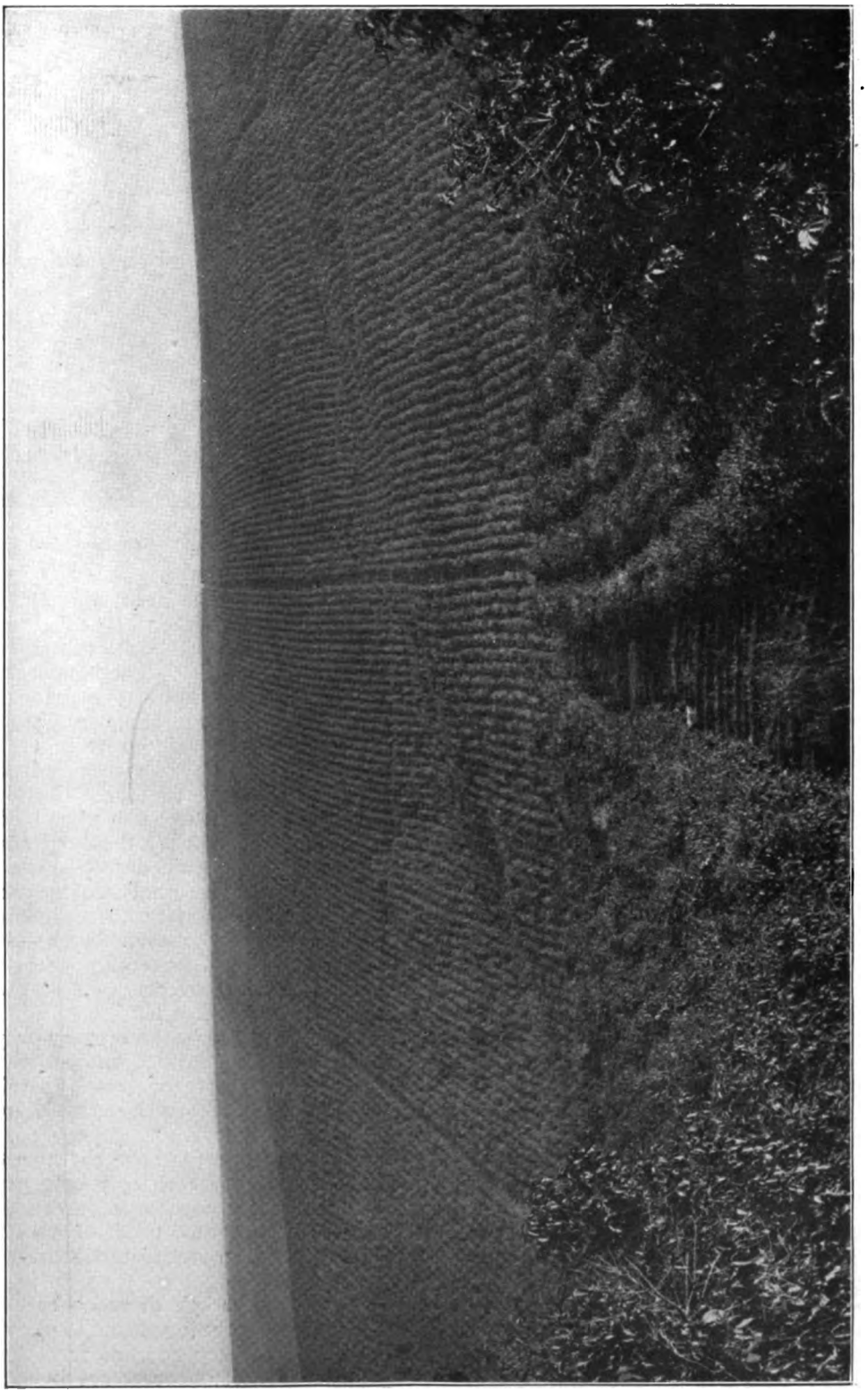
The chief coffee-growing plantations in Brazil are situated on plateaus seldom less than 1,800 feet above sea-level, and ranging up to 4,000 feet. The mean annual temperature is approximately 70° F., ranging from a mean of 60.8° in winter to a mean of 72° in summer. The temperature has been known, however, to register 32° in winter and 97.7° in summer.

While coffee trees will grow in almost any part of Brazil, experience indicates that the two most fertile soils, the *terra roxa* and the *massape,* lie in the "coffee belts." The *terra roxa* is a dark red earth, and is practically confined to São Paulo, and to it is due the predominant coffee productivity of that state. *Massape* is a yellow, dark red — or even black — soil, and occurs more or less contiguous to the *terra roxa.* With a covering of loose sand, it makes excellent coffee land.

Brazil planters follow the nursery-propagated method of planting, and cultivate, prune, and spray their trees liberally. Transplanting is done in the months from November to February.

Coffee-growing profits have shown a decided falling off in Brazil in recent years. In 1900 it was not uncommon for a coffee estate to yield an annual profit of from 100 to 250 percent. Ten years later the average returns did not exceed twelve percent.

In Brazil's coffee belt there are two seasons — the wet, running from September to March; and the dry, running from April to August. The coffee trees are in bloom



FAZENDA GUATAPARA, SÃO PAULO, BRAZIL, WITH 800,000 TREES IN BEARING

from September to December. The blossoms last about four days, and are easily beaten off by light winds or rains. If the rains or winds are violent, the green berries may be similarly destroyed; so that great damage may be caused by unseasonable rains and storms.

The harvest usually begins in April or May, and extends well into the dry season. Even in the picking season, heavy rains and strong winds — especially the latter — may do considerable damage; for in Brazil shade trees and wind-breaks are the exception.

Approximately twenty-five percent of the São Paulo plantations are cultivated by machinery. A type of cultivator very common is similar to the small corn-plow used in the United States. The Planet Junior, manufactured by a well known United States agricultural-machinery firm, is the most popular cultivator. It is drawn by a small mule, with a boy to lead it, and a man to drive and to guide the plow.

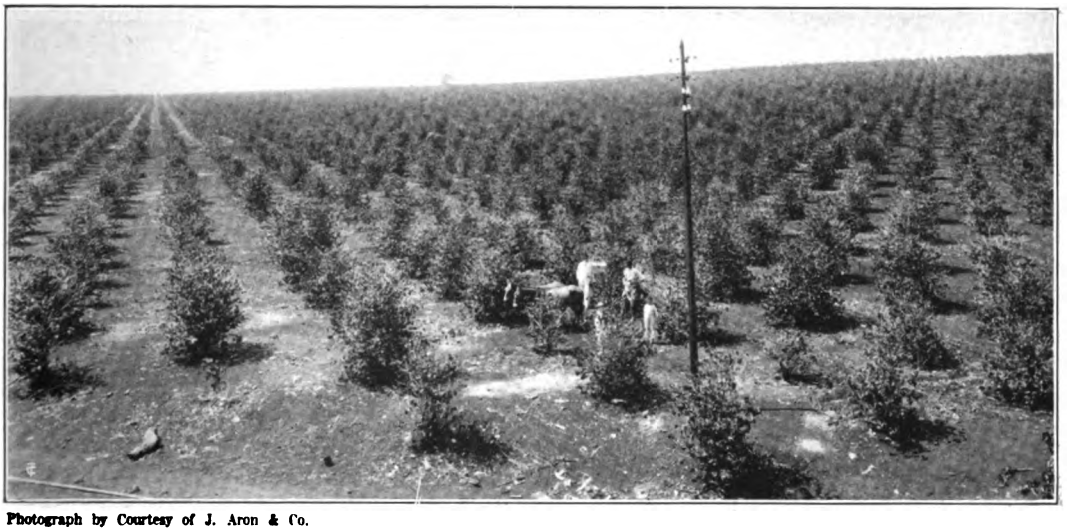
The preponderance of the coffee over other industries in São Paulo is shown in many ways. A few years ago the registration of laborers in all industries was about 450,000; and of this total, 420,000 were employed in the production and transportation of coffee alone. Of the capital invested in all industries, about eighty-five percent was in coffee production and commerce, including the railroads that depended upon it directly. An estimated value of $482,500,000 was placed upon the plantations in the state, including land, machinery, the residences of owners, and laborers' quarters.

Copyright by Brown & Dawson.

PICKING COFFEE IN SAO PAULO

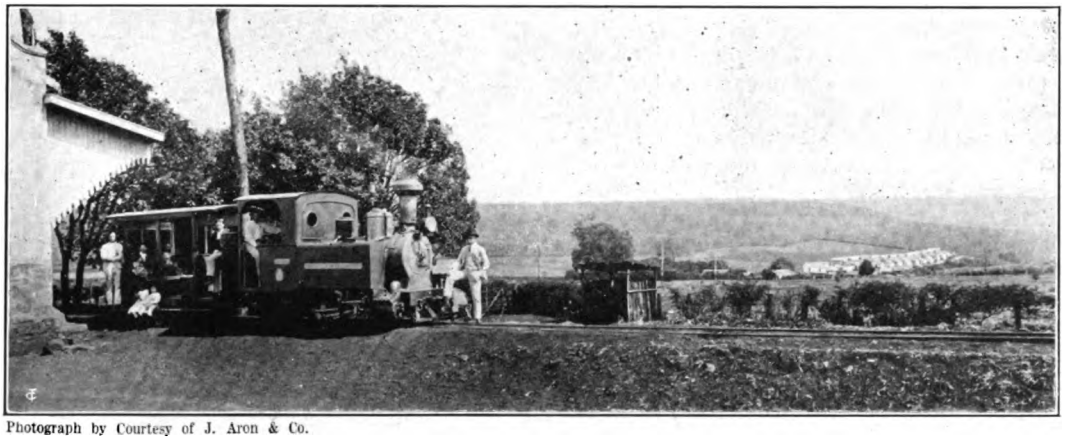
In all Brazil, there are approximately 1,200,000,000 coffee trees. The number of bearing coffee trees in São Paulo alone increased from 735,000,000 in 1914-15 to 834,000,000 in 1917-18. The crop in 1917-18 was 1,615,000,000 pounds, one of the largest on record. In the agricultural year of 1922-23 there were 764,969,500 coffee trees in bearing in São Paulo, and in São Paulo, Minas, and Parana, 824,194,500.

Plantations having from 300,000 to 400,000 trees are common. One plantation near Ribeirao Preto has 5,000,000 trees, and requires an army of 6,000 laborers to work



Photograph by Courtesy of J. Aron & Co.

INTENSIVE CULTIVATION METHODS IN THE RIBEIRAO PRETO DISTRICT, SAO PAULO



Photograph by Courtesy of J. Aron & Co.

PRIVATE RAILROAD ON A SAO PAULO COFFEE FAZENDA
Showing coffee trees and laborers' houses in the middle distance at right

it. Another planter owns thirty-two adjacent plantations containing, in all, from 7,500,000 to 8,000,000 coffee trees and gives employment to 8,000 persons. There are fifteen plantations having more than 1,000,000 trees each, and five of these have more than 2,000,000 trees each. In the municipality of Ribeirao Preto there were 30,000,000 trees in 1922.

The largest coffee plantations in the world are the Fazendas Dumont and the Fazendas Schmidt. The Fazendas Dumont were valued, in 1915, in cost of land and improvements, at $5,920,007; and since those figures were given out, the value of the investment has much increased. Of the various Fazendas Schmidt, the largest, owned by Colonel Francisco Schmidt, in 1918 had 9,000,000 trees with an annual yield of 200,000 bags, or 26,400,000 pounds, of coffee. Other large plantations in São Paulo with a million or more trees, are the Companhia Agricola Fazenda Dumont, 2,420,000 trees; Companhia São Martinho, 2,300,000 trees; Companhia Dumont, 2,000,000 trees; São Paulo Coffee Company, 1,860,000 trees; Christiana Oxorio de Oliveira, 1,790,000 trees; Companhia Guatapara 1,550,000 trees; Dr. Alfredo Ellis, 1,271,000 trees; Companhia Agricola Araqua, 1,200,000 trees; Companhia Agricola Ribeirao Preto, 1,138,000 trees; Rodriguez Alves Irmaos, 1,060,000 trees; Francisca Silveira do Val, 1,050,000 trees; Luiza de Oliveira Azevedo, 1,045,000 trees; and the Companhia Cafeeria São Paulo, 1,000,000 trees.

The average annual yield in São Paulo is estimated at from 1,750 to 4,000 pounds from a thousand trees, while in exceptional instances it is said that as much as 6,000 pounds per 1,000 trees have been gathered. Differences in local climatic conditions, in ages of trees, in richness of soil, and in the care exercised in cultivation, are given as the reasons for the wide variation.

The oldest coffee-growing district in São Paulo is Campinas. There are 136 others.

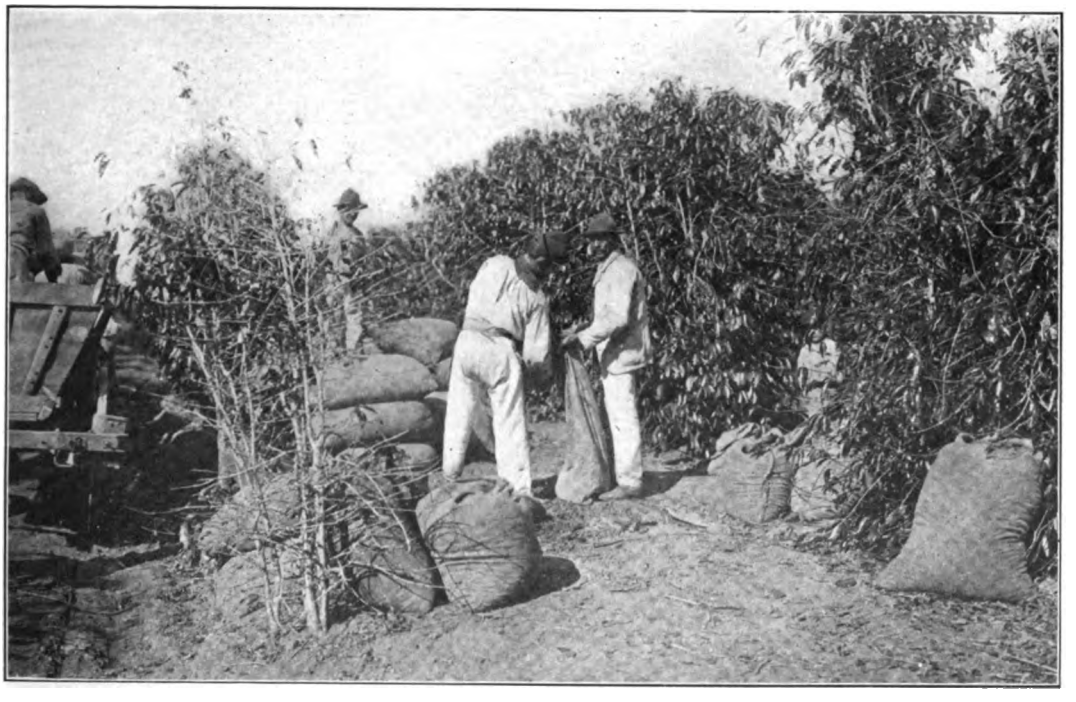
Bahia coffee is not so carefully cultivated and harvested as the Santos coffee. The introduction of capital and modern methods would do much for Bahia, which has the advantage of a shorter haul to the New York and the European markets.

On the average, something like seventy percent of the world's coffee crop is grown in Brazil, and two-thirds of this is produced in São Paulo. Coffee culture in many districts of São Paulo has been brought to the point of highest development; and yet its product is essentially a quantity, not a quality, one.

COLOMBIA. In Colombia, coffee is the principal crop grown for export. It is produced in nearly all departments at elevations ranging from 3,500 feet to 6,500 feet. Chief among the coffee-growing departments are Antioquia (capital, Medellin); Caldas (capital, Manizales); Magdalena (capital, Santa Marta); Santander (capital, Bucaramanga); Tolima (capital, Ibague); and the Federal District (capital, Bogotá). The department of Cundinamarca produces a coffee that is counted one of the best of Colombian grades. The finest grades are grown in the foot-hills of the Andes, in altitudes from 3,500 to 4,500 feet above sea level.

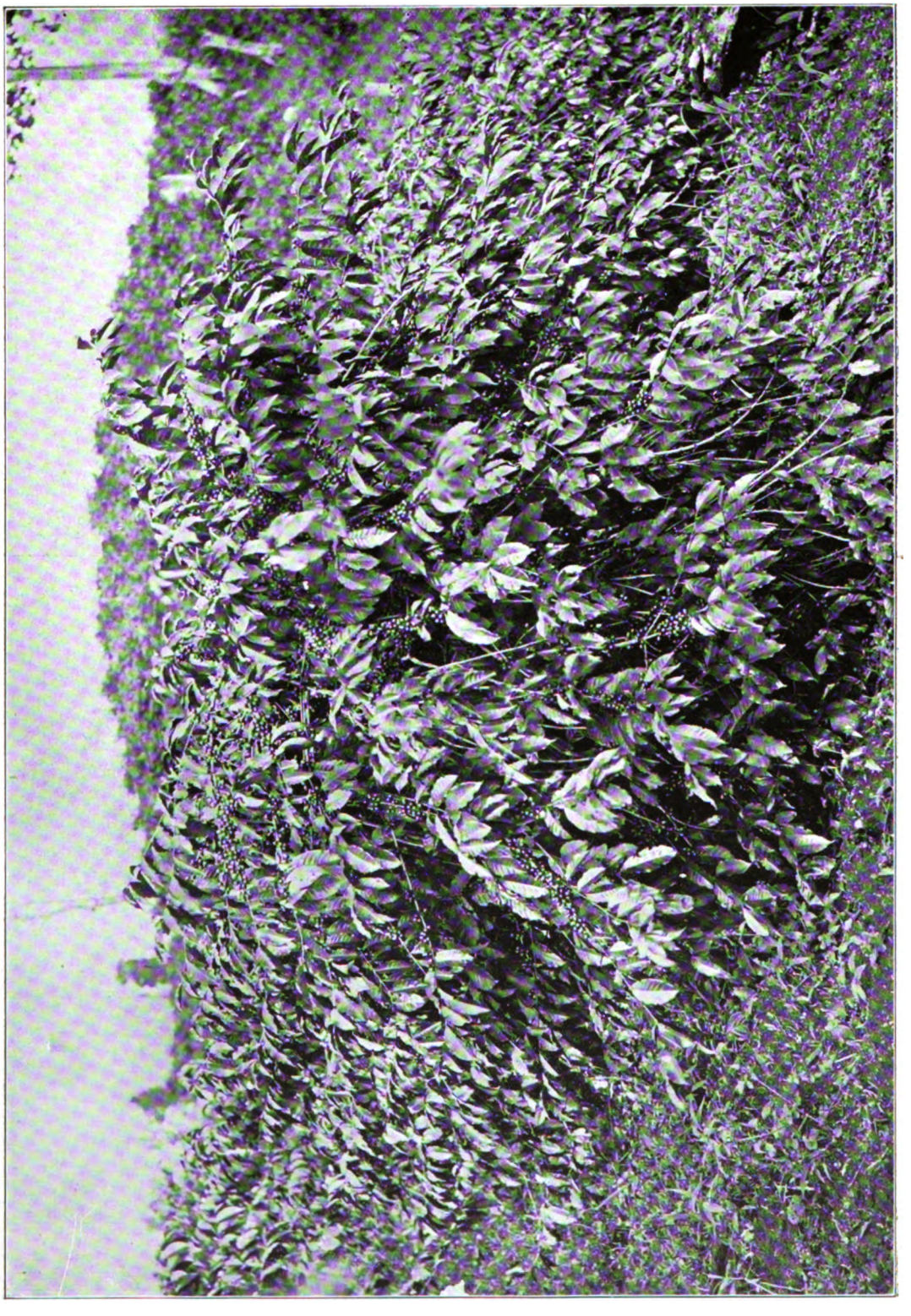
THE CONDUCTING SLUICEWAY AT GUATAPARA

The running water carries the picked coffee berries to pulpers and washing tanks



COFFEE PICKING AND FIELD TRANSPORT

COFFEE CULTURE IN SÃO PAULO, BRAZIL



A NEAR VIEW OF A HEAVILY LADEN COFFEE TREE ON A BOGOTA PLANTATION

PICKING COFFEE ON A BOGOTA PLANTATION

Methods of planting, cultivation, gathering, and preparing the Colombian coffee crop for the market are substantially those that are common in all coffee-producing countries, although they differ in some small particulars. About 700 trees are usually planted to the acre, and native trees furnish the necessary shade. The average yield is one pound per tree per year.

While *Coffea arabica* has been mostly cultivated in Colombia, as in the other countries of South America, the *liberica* variety has not been neglected. Seeds of the *liberica* tree were planted here soon after 1880, and were moderately successful. Since 1900, more attention has been given to *liberica,* and attempts have been made to grow it upon banana and rubber plantations, which seem to provide all the shade protection that is needed. *Liberica* coffee trees begin to bear in their third year. From the fifth year, when a crop of about 650 pounds to the acre can reasonably be expected, the productiveness steadily increases until after fifteen or sixteen years, when a maximum of over one thousand pounds an acre is attained.

Antioquia is the largest coffee producing department in the republic, and its coffee is of the highest grade grown. Medellin, the capital, where the business interests of the industry are concentrated, is a handsome white city located on the banks of the Aburra river, in a picturesque valley that is overlooked by the high peaks of the Andean range. It is a town of about 80,000 inhabitants, thriving as a manufacturing center, abundant in modern improvements, and is the center of a coffee production of 500,000 bags known in the market as Medellin and Manizales. Another center in this coffee region is the town of Manizales, perched on the crest of the Andean spurs to dominate the valley extending to Medellin and the Cauca valley to the Pacific. There-about many small coffee growers are settled, and several hundred thousand bags of the beans pass through annually.

One of the interesting plantations of the country was started a few years ago in a remote region by an enterprising American investor. It was located on the slopes of the Sierra Nevada mountains 3,000 to 5,000 feet above sea-level, about twenty-five miles from the city of Santa Marta. An extended acreage of forest-covered land was acquired, about 600 acres of which were cleared and either planted in coffee or reserved for pasturage and other kinds of agriculture.

When the plantation came to maturity, it had nearly 300,000 trees. In 1919, there were 425,000 trees producing 3,600 hundred-weight of coffee.

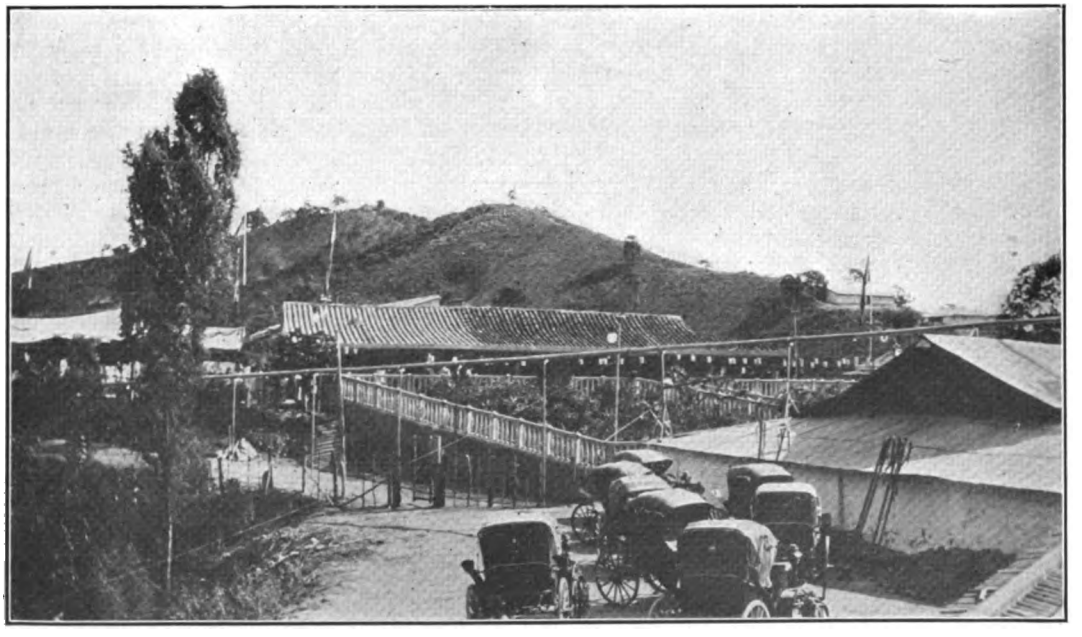
A typical Colombian plantation is the Namay, owned by one of the bankers of the Banco de Colombia of Bogotá. It is located a good half day's travel by rail and horseback from the city, about 5,000 feet above the level of the sea. There are 1,000 acres in the plantation, with 250,000 trees having an ultimate productive capacity of nearly 2,000 bags a year. During crop times, which are from May to July, about two hundred families are needed on an estate of this size.

VENEZUELA. Seeds of the coffee plant were brought into Venezuela from Martinique in 1784 by a priest who started a small plantation near Caracas. Five years later, the first export of the bean was made, 233 bags, or about 30,000 pounds. Within fifty years, production had increased to upward of 50,000,000 pounds annually; and by the end of the nineteenth century, to more than 100,000,000 pounds.

Situated between the equator and the twelfth parallel of north latitude, in the world's coffee belt, this country has an area equal to that of all the United States east of the Mississippi river and north of the Ohio and Potomac rivers, or greater than that of France, Germany, and the Netherlands combined — 599,533 square miles.

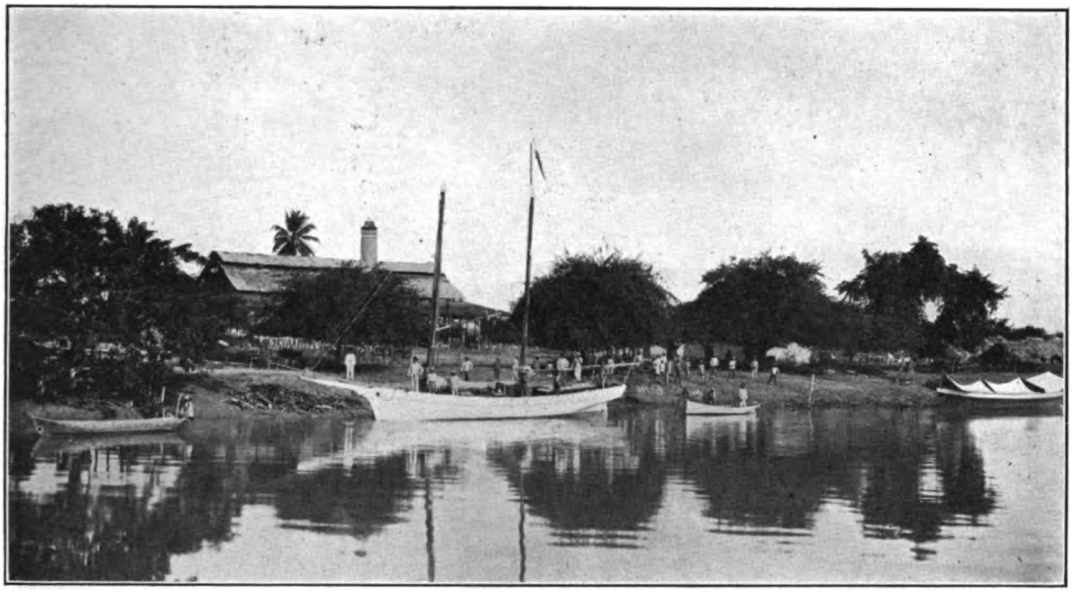
The chain of the Maritime Andes, reaching eastward across Colombia and Venezuela, approaches the Caribbean coast in the latter country. Along the slopes and foot-hills of these mountains are produced some of the finest grades of South American coffee. Here the best coffee grows in the *tierra templada* and in the lower part of the *tierra fria,* and is known as the *café de tierra fria,* or coffee of the cold, or high, land. In these regions the equable climate, the constant and adequate moisture, the rich and well-drained soil, and the protecting forest shade afford the conditions under which the plant grows and thrives best. On the fertile lowland valleys nearer the coast grows the *café de tierra caliente,* or coffee of the hot land.

Coffee growing has become the main agricultural pursuit of the country. In 1839 it was estimated that there were 8,900 acres of land planted in coffee, and in 1888 there were 168,000,000 coffee trees in the country on 346,000 acres of land. In the opening years of the twentieth century not far from 250,000 acres were devoted to this cultivation, comprised in upward of 33,000



ON THE ALTAMIRA HACIENDA, VENEZUELA

The long pipe crossing the center of the picture is a water sluiceway bringing coffee down from the hills



CARMEN HACIENDA, FRONTING ON THE ESCALANTE RIVER, VENEZUELA

plantations. The average yield per acre is about 250 pounds. The trees are usually planted from two to two and a quarter meters apart, and this gives about 800 trees to the acre. The triangle system is unknown.

In this country, the coffee tree bears its first crop when four or five years old. The trees are not subject to unusual hazards from the attacks of injurious insects and animals or from serious parasitic diseases. Nature is kind to them, and their only serious contention for existence arises from the luxuriant tropical vegetation by which they are surrounded. On the whole their cultivation is comparatively easy. On the best managed estates there are not more than 1,000 trees to a *fanegada* — about one and three-quarters acres of land — and it is calculated that an average annual yield for such a *fanegada* should be about twenty quintals, a little more than 2,032 pounds of merchantable coffee. It is to be noted, however, that the average yield per tree throughout Venezuela is low — not more than four ounces.

There are no great coffee belts as in Mexico and Central America. Many districts are days' rides apart. The plantations are isolated, and there is lacking a cooperative spirit among the growers.

Methods of cultivating and preparing the berry for the market are substantially those that prevail elsewhere in South America. Most plantations are handled in ordinary, old-fashioned ways; but the better estates employ machinery and methods of the most advanced and improved character at all points of their operation, from the planting of the seed to the final marketing of the berry.

JAVA. Java, the oldest coffee-producing country in which the tree is not indigenous, was producing a high-grade coffee long before Brazil, Colombia, and Venezuela entered the industry; and it held its supremacy in the world's trade for many years before the younger American producing countries were able to surpass its annual output. The first attempt to introduce the plant into Java took place in 1696, the seedlings being brought from Malabar in India and planted at Kadawoeng, near Batavia. Earthquake and flood soon destroyed the plants; and in 1699 Henricus Zwaardecroon brought the second lot of seedings from Malabar. These became the progenitors of all the *arabica* coffees of the Dutch East Indies. The industry grew, and in 1711 the first Java coffee was sold at public auction in Amsterdam. Exports amounted to 116,587 pounds in 1720; and in 1724 the Amsterdam market sold 1,396,486 pounds of coffee from Java.

From the early part of the nineteenth century up to 1905, cultivation was carried on under a Dutch government monopoly—

A Heavy Fruiting of Coffea Robusta in Java

excepting for the five years, 1811 - 16, when the British had control of the island. The government monopoly was first established when Marshal Daendels, acting for the crown of Holland, took control of the islands from the Netherlands East India Company. Before that time, the princes of Preanger had raised all the coffee under the provisions of a treaty made in the middle of the eighteenth century, by which they paid an annual tribute in coffee to the company for the privilege of retaining their land revenues. When the Dutch government recovered the islands from the British, the plantations, which had been permitted to go to ruin, were put in order again, and the government system re-established.

A modification of the first monopoly plan of the government was put into effect later in the régime of Governor Van den Bosch, and was maintained until into the twentieth century. Under the Daendels plan, each native family was required to keep 1000 coffee trees in bearing on village lands, and to give to the government two-fifths of the crop, delivered cleaned and sorted, at the government store. The natives retained the other three-fifths. Under the Van den Bosch system, each family was required to raise and care for 650 trees and to deliver the crop cleaned and sorted to the government stores at a fixed price. The government then sold the coffee at public auctions in Batavia, Padang, Amsterdam, or Rotterdam.

This method of fostering the new industry resulted in government control of fully four-fifths of the area under the crop, only the small balance being owned or worked independently by private enterprise. For many years after the cultivation had been fully started, this condition of the business persisted. Most of the privately-operated plantations had been in existence before the government had set up its monopoly system. Others were on the estates of native princes who, in treating with the Dutch, had been able to retain some of their original sovereign rights. While these plans worked well in encouraging the industry at the outset, they were not conducive to the fullest possibilities in production. Forced labor on the government plantations was naturally apt to be slow, careless, and indifferent. Private ownership and operation bettered this somewhat, the private estates being able to show annual yields of from one to two pounds per tree as compared with only a little more

than one-half pound per tree on government-controlled estates.

In the course of time, the system of private ownership gradually expanded beyond that of the government; and before the end of the nineteenth century, private owners were growing and exporting more coffee than did the Javanese government. The government withdrew from the coffee business in Java in 1905, and the last government auction was held in June of that year. The monopoly in Sumatra was given up in 1908. After that, however, coffee continued to be grown on government lands, but in much less quantity than in the years immediately preceding. The Dutch government withdrew from all coffee cultivation in 1918 - 19.

According to statistics, the ground under cultivation for all kinds of coffee in Java and the other islands of the Dutch East Indies in 1919 was 142,272 acres, of which 112,138 acres were in Java. Of this area, 110,903 acres were planted with *robusta,* 15,314 acres with *arabica,* 4,940 with *liberica,* and 11,115 with other varieties.

There were more than 400 European-managed estates in 1915, covering a planted area of about 209,000 acres. Three hundred and thirty of these estates, representing 165,000 acres, were in Java. On that island production in 1904 was 47,927,000 pounds; in 1905, 59,092,000 pounds; in 1906, 66,953,000 pounds; in 1907, 31,044,000 pounds; 1908, 39,349,000 pounds. The total crop in 1919 for all the Netherlands East Indies was 97,361,000 pounds, as against 140,764,800 pounds for 1918.

Intensive cultivation methods on the European-operated plantations in Java have been practised for many years; and the Netherlands East Indies government has long maintained experimental stations for the purpose of improving strains and cultivation methods.

In some parts of the island, especially in the highlands, the climate and soil are ideal for coffee culture. The *robusta* tree grows satisfactorily even at altitudes of less than 1,000 feet in some regions; but its bearing life is only about ten years, as compared with the thirty years of the *arabica* at altitudes of from 3,000 to 4,000 feet. The low-ground trees generally produce earlier and more abundantly. On some of the highland plantations, pruning is not practised to any great extent, and the trees often reach thirty or forty feet in height. This necessitates the use of ladders in pick-

ROAD THROUGH A COFFEE ESTATE IN EAST JAVA

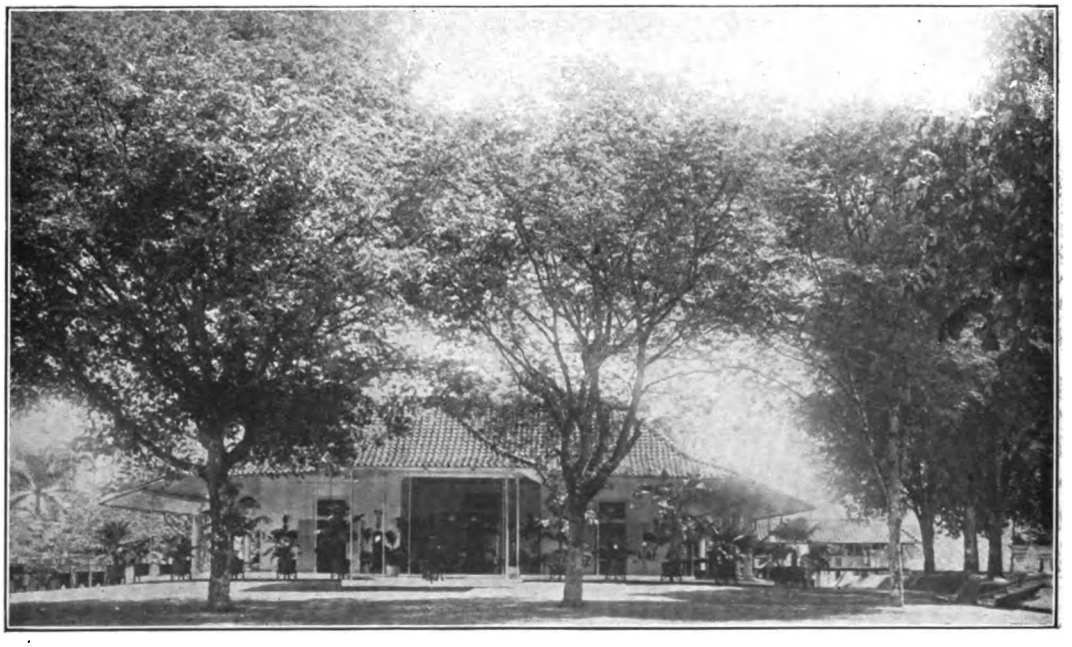
NATIVE PICKING COFFEE, SUMATRA

ing; but frequently the yield per tree has been from six to seven pounds.

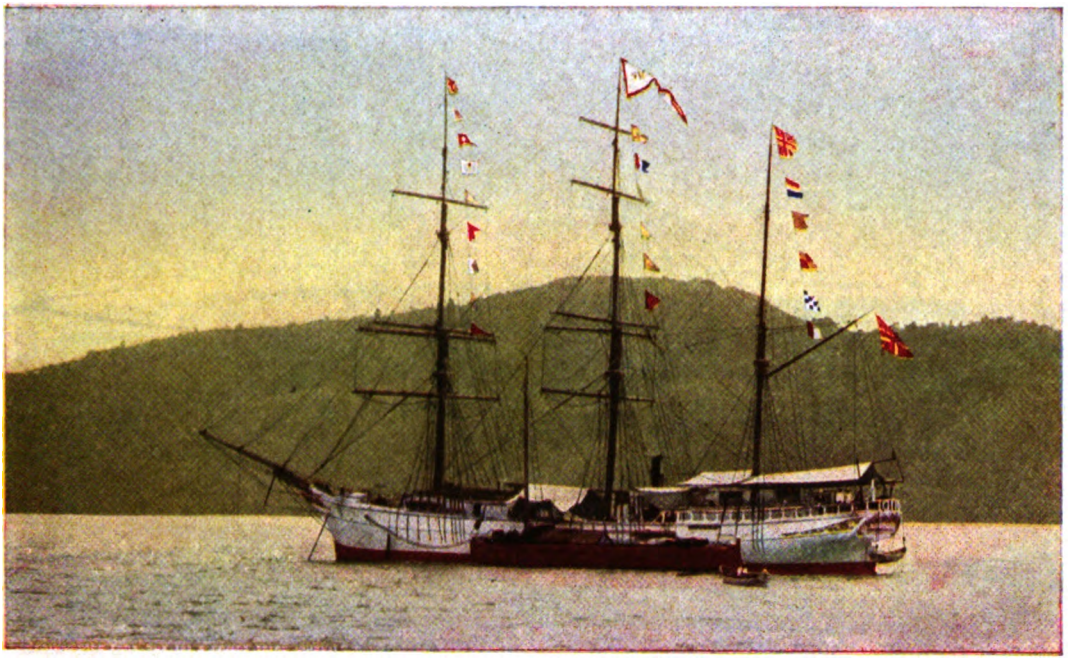
Coffee is produced commercially in nearly every political district in Java, but the bulk of the yield is obtained from East Java. The names best known to European and American traders are those of the regencies of Besoeki and Pasoeroean; because their coffees make up eighty-seven percent of Java's production. Some of the other better known districts are: Preanger, Cheribon, Kadoe, Samarang, Soerabaya, and Tegal.

The *arabica* variety has practically been driven out of the districts below 3,500 feet altitude by the leaf disease, and has been succeeded by the more hardy *robusta* and *liberica* coffees and their hybrids. Illustrating the importance of *robusta* coffee, Netherlands East India government in a statement issued August, 1919, estimated the area under cultivation on all islands as follows: *robusta,* eighty-four percent; *arabica,* five and one-half percent; *liberica,* four and one-half percent. The balance, six percent, was made up of scores of other varieties, among the most important being the *canephora, Ugandae, baukobensis, suakurensis, Quillou, stenophylla,* and *roodbessige.* All of these are similar to *robusta,* and are exported as *robusta-achtigen* (*robusta*-like). The *liberica* group includes the *excelsa, abeokuta, Dewevrei, arnoldiana, aruwimiensis,* and *Dybowskii.*

SUMATRA. Practically all the coffee districts in Sumatra are on the west coast, where the plant was first propagated early in the eighteenth century. Padang, the capital city, is the headquarters for Sumatra coffee. With climate and soil similar to Java, the island of Sumatra has the added advantage that its land is not "coffee *moe*", or coffee tired, as is the case



PALATIAL BUNGALOW OF ADMINISTRATOR, DRAMAGA, IN THE PREANGER DISTRICT, JAVA



OLD-TIME SAILING VESSEL LOADING IN PADANG ROADS

INTERIOR OF A DUTCH COFFEE-CLEANING FACTORY, PADANG

COFFEE SCENES IN SUMATRA, NETHERLANDS EAST INDIES

ADMINISTRATOR'S BUNGALOW ON THE GADOENG BATOE ESTATE, SUMATRA

in parts of Java. Some of the world's best coffees are still coming from Sumatra; and the island has possibilities that could make it an important factor in production. Sumatra produced 287,179 piculs of coffee in 1920. The total production of all the islands that year was 807,591 piculs.

The districts of Ankola, Siboga, Ayer Bangies, Mandheling, Palembang, Padang, and Benkoelen, on the west coast, have some of the largest estates on the island; and their products are well known in international trade. The east coast has recently gone in for heavy plantings of *robusta*

As in Java, coffee for a century or more was cultivated under the government-monopoly scheme. The compulsory system was given up in this island in 1908, three years after it was abandoned in Java.

OTHER EAST INDIES. Coffee is grown in several of the other islands in the Dutch East Indian archipelago, chiefly on the Celebes, Bali, Lombok, the Moluccas, and Timor. Most of the estates are under native control, and the methods of cultivation are not up to the standard of the European-owned plantations on the larger islands of Java and Sumatra. The most important of these islands is Celebes, where the first coffee plant was introduced from Java about 1750, but where cultivation was not carried on to any great extent until about seventy-five years later. In 1822 the production amounted to 10,000 pounds; in 1917, the yield was 1,322,328 pounds.

SALVADOR. Coffee, which is far and away the most important crop in Salvador, constitutes in value more than one-half the total exports. It has been cultivated since about 1852, when plants were brought from Havana; but the development of the industry in its early years was not rapid. The first large plantations were established in 1876 in La Paz, and that department has become the leading coffee-producing section of the country.

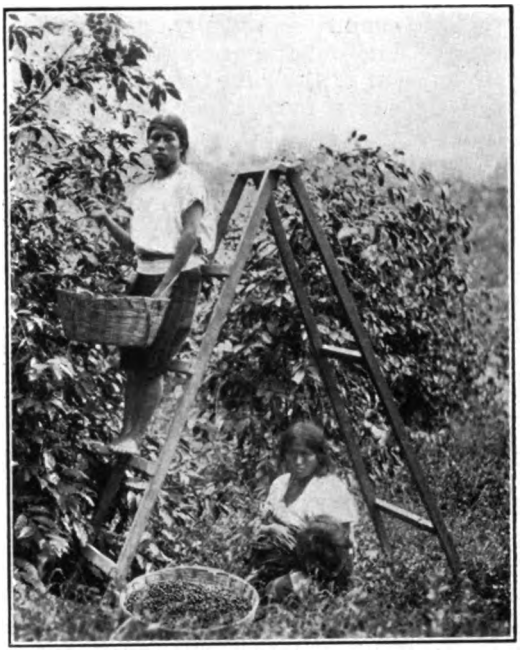
The berry is grown in all districts that have altitudes of from 1,500 to 4,000 feet. Besides those of La Paz, the most productive plantations are in the departments of Santa Ana, Sonsonate, San Salvador, San Vincente, San Miguel, Santa Tecla, and Ahuachapam. In contrast with several of the adjoining Central American republics, native Salvadoreans are the owners of most of the coffee farms, very few having passed into the hands of foreigners. The laborers are almost entirely native Indians. A considerable part of the work of cultivating and preparing the berry for the market is still done by hand; but in recent years machinery has been set up on the large estates and for general use in the receiving centers.

WELL CULTIVATED YOUNG COFFEE TREES IN BLOSSOM

ENTRANCE TO A FINCA IN THE HIGHLANDS

COFFEE CULTURE IN GUATEMALA

It is estimated that now about 166,000 acres are under coffee, nearly all the land in the country suitable for that purpose. As in most other coffee-raising countries, the trees begin bearing when they are two or three years old, reach full maturity at the age of seven or eight years, and continue to bear for about thirty years. Intensive cultivation and a more extensive use of fertilizers have been urged as necessary in order to increase the crop; but, so far, with not much effect, the importation of fertilizer being still very small. Crop gathering begins in the lowlands in November, and gradually proceeds into the higher regions, month by month, until the picking in the highest altitudes is finished in the following March.



INDIANS PICKING COFFEE, GUATEMALA

GUATEMALA. Guatemala began intensive coffee growing about 1875. Coffee had been known in the country in a small way from about 1850, but now serious attention began to be given to its cultivation, and it quickly advanced to an industrial position of importance. Within a generation it became the great staple crop of the country.

Guatemala has an area of 48,250 square miles, about the size of the state of Ohio. Its population is about 2,000,000. Three mountain ranges, intersecting magnificent table lands, traverse the country from north to south; and there is the great coffee territory. The table lands are from 2,500 to 5,000 feet above sea-level, and have a temperate climate most agreeable to the coffee tree. On the lower heights it is necessary to protect the young trees from the extreme heat of the sun; and the banana is most approved for this purpose, since it raises its own crop at the same time that it is giving shade to its companion tree. On the higher levels the plantations need protection from the cold north winds that blow strongly across the country, especially in December, January, and February. The range of hills to the north is the best protection, and generally is all sufficient. When the weather becomes too severe, heaps of rubbish mixed with pitch are thrown up to the north of the fields of coffee trees and set afire, the resultant dense smoke driving down between rows of trees and saving them from the frost.

Named in the order of their productivity, the coffee districts are Costa Cuca, Costa Grande, Barberena, Tumbador, Coban, Costa de Cucho, Chicacao, Xolhuitz, Pochuta, Malacatan, San Marcos, Chuva, Panan, Turgo, Escuintla, San Vincente, Pacaya, Antigua, Moran, Amatitlan, Sumatan, Palmar, Zunil, and Motagua.

Estimates of coffee acreage vary. One authority, too conservatively, perhaps, puts the figure at 145,000. Another estimate is 260,000 acres. Under cultivation are from 70,000,000 to 100,000,000 trees from which an annual crop averaging about 75,000,000 pounds is raised, and the exceptional amounts of nearly 90,000,000 and 97,000,000 pounds have been harvested. Several plantations of size can be counted upon for an annual production of more than 1,000,000 pounds each.

Before the World War German interests dominated the coffee industry, handling fully eighty percent of the crop, and growing nearly half of it.

Planting and cultivation methods in Guatemala are about the same as those prevailing in other countries. The trees are usually in flower in February, March, and April, and the harvesting season extends from August to January. All work on the plantation is done by Indian laborers under a peonage system, families working in companies: wages are small, but sufficient, conditions of living being easy. As elsewhere in these tropical and sub-

tropical countries, scarcity of labor is severely felt, and is a grave obstacle to the development of the industry in a land that is regarded as particularly well adapted to it.

HAITI. Haiti, the magic isle of the Indies, has grown coffee almost from the beginning of the introduction of the tree into the western hemisphere. Its cultivation was started there about 1715, but the trees were largely permitted to fall into a wild natural state, and little attention was given to them or to the handling of the crop. Fertility of soil, climate, and moisture are favorable, and the advancement of the industry has been retarded only by the political conditions of the negro republic and a general lack of industry and enterprise on the part of the people.

Haiti is an island with three names. Haiti is used to describe the island as a whole, and to denote the Republic of Haiti, which occupies the western third of its area. The island is also known as Santo Domingo, and San Domingo, names likewise applied to the Dominican Republic which occupies the eastern two-thirds of the land unit.

Plantations now existing in Haiti have had, with rare exceptions, a life of more than ten or twenty years. It is estimated that they cover about 125,000 acres, with about 400 trees to the acre.

When the French acquired the island in 1789, the annual production was 88,360,502 pounds. During the following century that amount was not approached in any year, the nearest to it being 72,637,716 pounds in 1875. The lowest annual production was 20,280,589 pounds in 1818. The range during the hundred years, 1789 - 1890, was, with the exceptions noted, from 45,000,000 to 71,000,000 pounds.

MEXICO. Opinions differ as to the exact date when coffee was introduced into Mexico. It is said to have been transplanted there from the West Indies near the end of the eighteenth century. A story is current that a Spaniard set out a few trees, on trial, in southern Mexico, in 1800, and that his experiments started other Mexican planters along the same line. Coffee was grown in the state of Vera Cruz early in the nineteenth century; and the books of the Vera Cruz custom house record that 1,101 quintals of coffee were exported through that port during the years 1802, 1803, and 1805.

In the Coatepec district, which eventually became famous in the annals of Mexican coffee growing, trees were planted about the year 1808. Local history says that seeds were brought from Cuba by Arias, a partner of the house of Pedro Lopez, owners of the large *hacienda* of Orduna in Coatepec.

THE COFFEE PLANTER'S LIFE IN GUATEMALA IS ONE OF PLEASANTNESS AND PEACE

THIRTY-YEAR-OLD COFFEE TREES, LA ESPERANZA, HUATUSCO, MEXICO

The seeds were given to a priest, Andres Dominguez, who sowed them near Teocelo. When he had succeeded in starting seedlings, he gave them away to other planters there-about. The plants thrived, and this was the beginning of coffee cultivation in that section of the country.

It was, however, nearly ten years later before the cultivation was on a scale approaching industrial and commercial importance. About 1816 or 1818 a Spaniard, named Juan Antonio Gomez, introduced the plant into the neighborhood of Cordoba. This city, now on the line of the Mexican and Vera Cruz Railroad, 200 miles from Mexico City, and sixty miles from Vera Cruz, is 2,500 feet above sea-level, and is situated in the most productive tropical region of the country.

Having been started in Coatepec and Cordoba, the industry was centered for a long time in the state of Vera Cruz. For many years practically all the coffee grown commercially in Mexico was produced in that state. Gradually the new pursuit spread to the mountains in the adjacent states of Oaxaca and Puebla, where it was taken up by the Indians almost entirely, and is still followed by them, but not on a large scale.

Although cultivation is now widely distributed in most of the more southern states of the republic, the principal coffee territory is still in Vera Cruz, where lie the districts of Cordoba, Orizaba, Huatusco, and Coatepec. In the same region are the Jalapa district, and the mountains of Puebla, where a great deal of coffee is grown. Farther south are the Oaxaca districts on the mountain slopes of the Pacific coast, and still farther south the districts of the state of Chiapas. Planting in the Pluma district in Oaxaca was begun about fifty years ago, and it now produces annually, in good years, nearly 1,000,000 pounds. The youngest district in this section is Soconusco, one of the most prolific in the republic, having been developed within the last thirty years. The region is near the border of Guatemala, and the coffee is held by many to possess some of the quality of the coffee of that country. The influence of Guatemalan methods has been felt also in its cultivation and handling, especially in increasing plantation productiveness. On the gulf slope of Oaxaca, there are plantations that annually produce 222,000 to 550,000 pounds. Several United States companies have become interested in coffee growing in this

state, and their output in recent years has been put upon the market in St. Louis.

Two principal varieties of coffee are recognized in Mexico. A sub-variety of *Coffea arabica* is mostly cultivated. This is an evergreen, growing only from five to seven feet. It flourishes well at different altitudes and in different climes, from the temperate plains of Puebla to the hot, damp, lower lands of Vera Cruz and Oaxaca, and other Pacific-coast regions. The range of elevation for it is from 1,500 to 5,000 feet, and it is satisfied with a temperature as low as 55° or as high as 80°, with plenty of natural humidity or with irrigation in the dry season. The other variety is called the "myrtle" and is widely grown, although not in large quantities. It is distinguished from *arabica* by the larger leaf of the tree and by the smaller corolla of the flower. It is a hardier plant than the *arabica* and will stand the higher temperature of low altitudes, thriving at an elevation of from 500 to 3,000 feet above sea-level. Mostly it is cultivated in the Cordoba district.

It is claimed by many that the Mexican coffee of best quality is grown in the western regions of the table lands of Colima and Michoacan, but only a small quantity of that is available for export. The state of Michoacan is especially favored by climate, altitude, soil, and surroundings to produce coffee of exceptionally high grade, and the Uruapan is considered to be its best.

Trees flower in January and March, and in high altitudes as late as June or July. Berries appear in July and are ripe for gathering in October or November, the picking season lasting until February.

Trees begin to yield when two or three years old, producing from two to four ounces. They reach full production, which is about one and a half pounds, at the age of six or seven years, though in the districts of Chiapas, Michoacan, Oaxaca, and Puebla, annual yields of three to five pounds per tree have been reported.

Since the World War American buyers have shown greater interest in the Tapachula coffee grown in Chiapas.

PORTO RICO. Coffee culture in Porto Rico dates from 1755 or even earlier, having been introduced from the neighboring islands of Martinique and Haiti. Count O'Reilly, writing of the island in the eighteenth century, mentions that the coffee exports for five years previous to 1765 amounted in value to $2,078. Old records show that in 1770 there was a crop of 700,000 pounds and that seems to be the first evidence that the new industry was growing to any noticeable proportions. For a hundred years, at least, only slow progress was made. In 1768 the king of Spain issued a royal decree exempting coffee growers on the island from the payment of taxes or charges for a period of five years; but even that measure was not materially successful in stimulating interest and in developing cultivation.

MEXICAN COFFEE PICKER, COATEPEC DISTRICT

Porto Rico is a good coffee-growing country; soil, climate, and temperature are well adapted to the berry. The coffee belt extends through the western half of the island, beginning in the hills along the south coast around Ponce, and extending north through the center of the island almost to Arecibo, near the west end of the north coast. But some coffee is grown in the other parts of the island, in sixty-four of the sixty-eight municipalities. Mountain sections are considered to be superior.

The largest plantations are in the region which includes the municipalities of Utuado, Adjuntas, Lares, Las Marias, Yauco, Maricao, San Sebastian, Mayaguez, Ciales, and Ponce. With the exception of Ponce and Mayaguez, all these districts are back from the coast; but insular roads of

recent construction make them now easily accessible, and there is no point on the island more than twenty miles distant from the sea.

From the Sierra Luquillo range, which rises to a height of 1,500 feet, and from Yauco, Utuado, and Lares, come excellent coffees; and, on the whole, these are considered to be the best coffee regions of the island. A fine grade of coffee is also grown in the Ciales district. Figures compiled by the Treasury Department of the insular government for the purpose of taxation showed that for the tax year 1915-16 there were 167,137 acres of land planted to coffee and valued at $10,341,592, an average of $61.87 per acre. In 1910, there were 151,000 acres planted in coffee. In 1916 there were more than 5,000 separate coffee plantations.

Originally the coffee trees of Porto Rico were all of the *arabica* variety. In recent years numerous others have been introduced, until in 1917 there were more than 2,500 trees of new descriptions on the island.

The virgin land in the interior of the island is admirably adapted to the coffee tree, and less labor is required to prepare it for plantation purposes than in many other coffee-growing countries. It is cleared in the usual manner, and the trees are planted about eight feet apart, an average of 680 trees to the acre. The seeds are planted in February; and if the seedlings are transplanted, that is done when they are a year or a year and a half old. The guama, a big strong tree of dense foliage, is used for a wind-break on the ridges; and the guava, for shade in the plantation. Plow cultivation is generally impossible on account of the lay of the land, and only hoeing and spade work are done. Pruning is carefully attended to as the trees become full grown.

Flowering is generally in February and March, or even later. Heavy rains in April make a poor crop. Harvesting begins in September and extends into January, during which time ten pickings are made.

The average yield per acre is between 200 and 300 pounds; but expert authority — Prof. O. F. Cook — in a statement made to the Committee on Insular Affairs of the United States House of Representatives, in 1900, held that under better cultural methods the yield could be increased to 800 or 900 pounds per acre. One estimator has calculated that an average planta-

RECEIVING AND MEASURING THE RIPE BERRIES FROM THE PICKERS, MEXICO

SINGLE PORTO RICO COFFEE TREE IN FULL BEARING, PROPPED UP WITH STAKES

tion of 100 acres had cost its owner at the end of six or seven years, the bearing age, about $13.100 with yields of 75 pounds per acre in the third and in the fourth years, 400 pounds per acre in the fifth year, and 500 pounds in the sixth year, the income from which would practically have met the cost to that time. It is held by the same authority that an intensively cultivated, well-situated farm of selected trees, 880 to the acre, should yield some 880 pounds of cleaned coffee to the acre.

COSTA RICA. Costa Rica ranks next to Guatemala and Salvador among the Central American countries as a producer of coffee, showing an average annual yield in recent years of 35,000,000 pounds as compared with Guatemala's 80,000,000 and Salvador's 75,000,000 pounds. Nicaragua has an average annual production of 30,000,000 pounds.

Coffee was introduced into Costa Rica in the latter part of the eighteenth century; one authority saying that the plants were brought from Cuba in 1779 by a Spanish voyager, Navarro, and another saying that the first trees were planted several years later by Padre Carazo, a Spanish missionary coming from Jamaica. For more than a century six big coffee trees standing in a courtyard in the city of Cartago were pointed out to visitors as the very trees that Carazo had planted.

The coffee-producing districts are principally on the Pacific slope and in the central plateaus of the interior. Plantations are located in the provinces of Cartago, Tres Rios, San José, Heredia, and Alajuela. In the province of Cartago are several extensive new estates on the slope to the Atlantic coast. The San José and the Cartago districts are considered by many to be the best naturally for the coffee tree. The soil is an exceedingly rich black loam made up of continuous layers of volcanic ashes and dust from three to fifteen feet deep. Preferable altitudes for plantations range from 3,000 to 4,500 feet, although a height of 5,000 feet is not out of use and there are some estates that do fairly well on levels as low as 1,500 feet.

INDIA. Tradition has it that a Moslem pilgrim in the seventeenth century brought from Mecca to India the first coffee seeds known in that country. They were planted near a temple on a hill in Mysore called Baba Budan, after the pilgrim; and from there the cultivation of coffee gradually spread to neighboring

THE MODERN IDEA IN COFFEE CULTIVATION, COSTA RICA

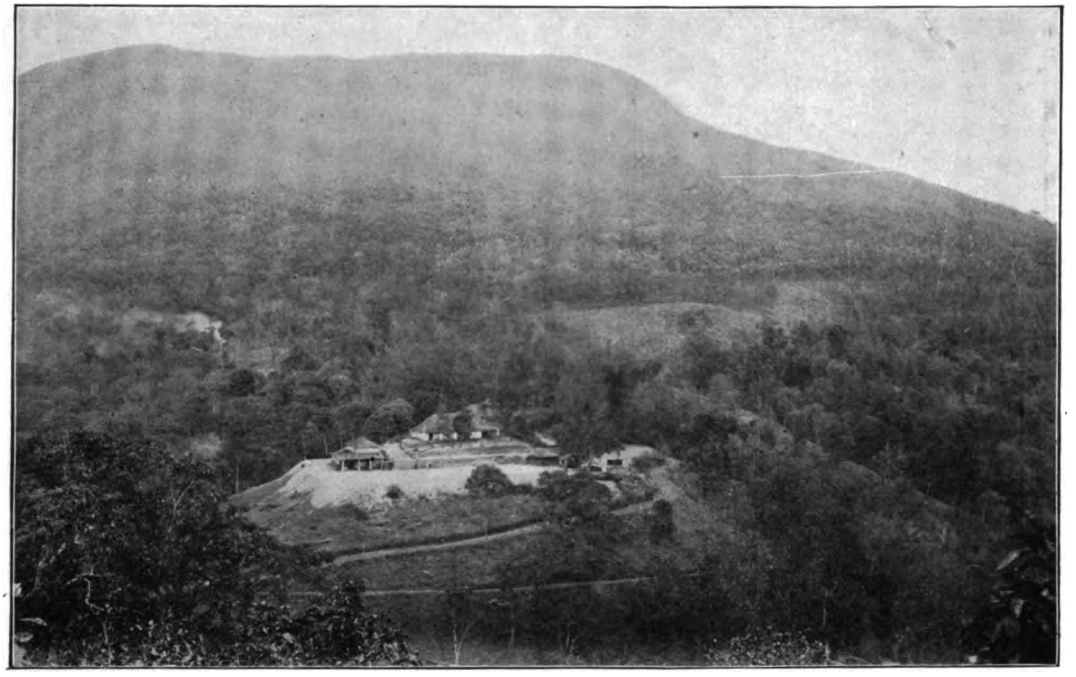
PICKING COSTA RICA COFFEE

districts. Aside from this legend, nothing further is heard about coffee in India until the early part of the nineteenth century, when its existence there was confirmed by the granting of a charter to Fort Gloster, near Calcutta, authorizing that place to become a coffee plantation.

Planting was begun on the flat land of the plains, but the trees did not thrive. Then the cultivation was extended to the hills in southern India, especially in Mysore, where better success was achieved. The first systematic plantation was established in 1840. For the most part, the production has always been confined to southern India in the elevated region near the southwestern coast. The coffee district comprises the landward slopes of the Western Ghats, from Kanara to Travancore.

About one-half of the coffee-producing area is in Mysore; and other plantations are in Kurg (Coorg), the Madras districts of Malabar, and in the Nilgiri hills, those regions having 86 percent of the whole area under cultivation. Some coffee is grown also in other districts in Madras, principally in Madura, Salem, and Coimbator, in Cochin, in Travancore, and, on a restricted scale, in Burma, Assam, and Bombay. The area returned as under coffee in 1885 was 237,448 acres; in 1896, as 303,944 acres. Since then there has been a progressive decrease on account of damage from leaf diseases difficult to combat, and by competition with Brazilian coffee.

COFFEE ESTATE IN THE MOUNTAINS OF COSTA RICA



BIRD'S-EYE VIEW OF A COFFEE ESTATE IN MYSORE, INDIA

New land that had just been planted with coffee in plantations reported for 1919 - 20 amounted to 7,012 acres; while the area abandoned was 8,725 acres, representing a net decrease in cultivated area of 1,713 acres.

Of the total area devoted to coffee cultivation (126,919 acres), 49 percent was in Mysore, which yielded 35 percent of the total production; while Madras, with 23 percent of the total area, yielded 38 percent of the production. The total production for the year 1920 - 21 is reported as 26,902,471 pounds.

Yield varies throughout the country according to the methods of cultivation and the condition of the season. On the best estates in a good season, the yield per acre may be as high as 1,100 or 1,200 pounds, and on poor estates it may not be over 200 or 300 pounds. The *arabica* variety is chiefly cultivated. The *robusta* and *Maragogipe* have been tried, but without much success.

A representative plantation is the Santaverre in Mysore, comprising 400 acres, at an elevation of from 4,000 to 4,500 feet, where the coffee trees, cultivated under shade, produce from 100 to 250 tons of coffee a year. Other prominent estates in Mysore are Cannon's Baloor and Mylemoney, the Hoskahn, and the Sumpigay Khan.

NICARAGUA. Coffee trees will grow well anywhere in Nicaragua, but the best locations have altitudes of from 2,000 to 3,000 feet above sea level. At such elevations the yield varies from one pound to five pounds per tree annually; but above or below those, the average production diminishes to from one pound to one-half pound a tree.

Lands most suitable for the berry are on the Sierra de Managua, in Diriambe, San Marcos, and Jinotega, and about the base of the volcano Monbacho near Granada. Good land is also found on the island Omotepe in Lake Nicaragua, and around Boaco in the department of Chontales, where cultivation was begun in 1893.

There are also plantations in the vicinity of Esteli and Lomati in the department of Neuva Segovia. The most extensive operations are in the departments of Managua, Carazo, Matagalpa, Chontales, and Jinotega, and from those regions the annual crop has attained to such quantity that it has become the chief agricultural product of the republic. Poor and costly means of transportation on the Atlantic slope have operated to retard the develop-

COFFEE GROWING UNDER SHADE, UBBAN ESTATE, INDIA

ment of the industry there, even though conditions of climate are not unfavorable.

ABYSSINIA. In the absence of any conclusive evidence to the contrary, the claim that coffee was first made known to modern man by the trees on the mountains of the northeastern part of the continent of Africa may be accepted without reserve. Undoubtedly the plant grew wild all through tropical Africa; but its value as an addition to man's dietary was brought forth in Abyssinia.

Abyssinia, while it may have given coffee to the world, no longer figures as a prime factor in supplying the world, and now exports only a limited quantity. There are produced in the country two coffees known to the trade as Harari and Abyssinian, the former being by far the more important. The Harari is the fruit of cultivated *arabica* trees grown in the province of Harar, and mostly in the neighborhood of the city of Harar, capital of the province. The Abyssianian is the fruit of wild *arabica* trees that grow mainly in the provinces of Sidamo, Kaffa, and Guma.

The coffee of Harar is known to the trade as Mocha longberry or Abyssinian longberry. Most of the plantations upon which it is raised are owned by the native Hararis, Galla, and Abyssinians, although there are a few Greek, German, and French planters. The trees are planted in rows about twelve or fifteen feet apart, and comparatively little attention is given to cultivation. Crops average two a year, and sometimes even five in two years. The big yield is in December, January, and February. The average crop is about seventy pounds, and is mostly from small plots of from fifty to one hundred trees, there being no very large plantations. All the coffee is brought into the city of Harar, whence it is sent on mule-back to Dire-Daoua on the Franco-Ethiopian Railway, and from there by rail to Jibuti. Some of it is exported directly from Jibuti, and the rest is forwarded to Aden, in Arabia, for reexporting.

Abyssinian, or wild, coffee is also known as Kaffa coffee, from one of the districts where it grows most abundantly in a state of nature. This coffee has a smaller bean and is less rich in aroma and flavor than the Harari; but the trees grow in such profusion that the possible supply, at the minimum of labor in gathering, is practically unlimited. It is said that in south-

western Abyssinia there are immense forests of it that have never been encroached upon except at the outskirts, where the natives lazily pick up the beans that have fallen to the ground. It is shelled where it is found, in the most primitive fashion, and goes out in a dirty, mixed condition.

Formerly, much of this Kaffa coffee was sent to market through Boromeda, Harar, and Dire-Daoua. An average annual crop was about 6,000 bags, or 800,000 pounds, of which something more than one-half usually went through Harar. A customs and trading station has lately been established at Gambela, on the Sobat River: and with the development of this outlet, there has been a substantial and increasing exploitation of the wild-coffee plants since 1913. Large areas of land have been cleared, with a view to cultivation, and attention is being given to improved methods of harvesting and of preparing the coffee for the market. At one time a fair amount of coffee from this region went to Adis Abeba on the backs of pack mules, a journey of thirty-five or forty days, and then was carried to Jibuti, nearly 500 miles, part of the way by rail. Now practically all of it goes to Gambela, thence by steamers to Khartum, and by rail to the shipping-point at Port Sudan on the Red Sea.

OTHER AFRICAN COUNTRIES. Practically every part of Africa seems to be suitable for coffee cultivation, even United South Africa, in the southern part of the continent, producing 140,212 pounds in 1918. To name all the countries in which it is grown would be to list nearly all the political divisions of Africa. Among the largest producers are the British East African Protectorate, 18,735,572 pounds in 1918; French Somaliland, 11,222,736 pounds in 1917; Angola, 10,655,934 pounds in 1913; Uganda, 9,999,845 pounds in 1918; former German East Africa, 2,334,450 pounds in 1913; Cape Verde Islands, 1,442,910 pounds in 1916; Madagascar, 707,676 pounds in 1918; Liberia, 761,300 pounds in 1917; Eritrea, 728,840 pounds in 1918; St. Thomas and Prince's Islands, 484,350 pounds in 1916; and the Belgian Congo, 375,000 pounds in 1917.

ANGOLA. Coffee is Angola's second product, and there are large areas of wild-coffee trees. With a production of nearly 11,000,000 pounds, Angola ranks about third in Africa as a coffee-growing country. The coffee is gathered and sold by

A GALLA COFFEE GROWER, AND HIS HELPER, IN HIS GROVE OF YOUNG TREES NEAR HARAR

the natives, and there are also several European companies engaged in the coffee business. The chief coffee belt extends from the Quanza River northward to the Kongo at an altitude of 1,500 to 2,500 feet. In the Cazengo valley the wild trees are so thick that thinning out is the only operation necessary to the plantation-owner. When the trees become too tall, they are simply cut off about two feet above ground; and new shoots appear from the trunks the following season.

The largest coffee plantation, owned by the Companhia Agricola de Cazengo, produced in 1913, a record year, nearly 1,500 tons.

LIBERIA. Coffee is native to Liberia, growing wild in the hinterland of the negro republic, and in the natural state the trees often attain a height of from thirty to forty feet. Cultivated Liberian coffee, *Coffea liberica*, has become a staple of the civilized inhabitants of the country, and is grown successfully in hot, moist lowlands or on hills that are not much elevated. On account of the size of the trees, only about four hundred can be planted to the acre. In recent years the native Africans have been planting thousands of trees in the district of Grand Cape Mount. Coffee is grown in all parts of the republic, but chiefly in Grand Cape Mount and Montserrado.

GENERAL OUTLOOK IN AFRICA. In the African countries under control of European governments much recent progress has been made in promoting coffee growing and in improving methods of cultivation.

British interests were reported in 1919 as having started a movement toward reviving interest in the coffee growing industry in the British possessions in Africa. The report stated that Uganda, in the East African Protectorate, had 21,000 acres under coffee cultivation, with 16,000 acres more in other parts of the Protectorate, and 1,300 acres in Nyasaland; also that there is no hope of an immediate revival of the industry in Natal, where it was killed twenty years ago by various pests; " but it should certainly be established in the warmer parts of Rhodesia; and in the northern part of the Transvaal an effort is being made to bring this form of enterprise into practical existence."

Coffee growing possibilities in British East Africa (Kenya Colony) are alluring, according to reports from planters in that region. Late in 1920, Major C. J. Ross, a British government officer there, said that "British East Africa is going to be one of the leading coffee countries of the world." Coffee grows wild in many parts of the Protectorate, but the natives are too lazy to pick even the wild berries.

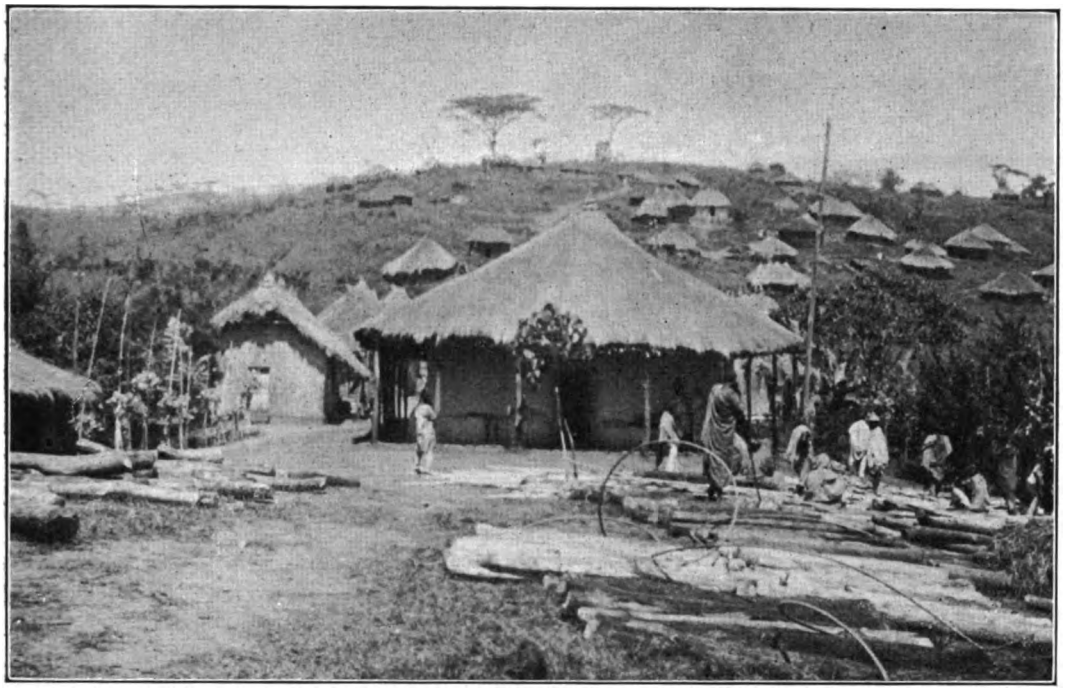
On the more advanced plantations in all parts of Africa the approved cultivation methods of other leading countries are carefully followed; especial care being given to weeding and pruning, because of the rank growth of the tropics. On the whole, however, little attention is given to intensive methods.

ARABIA. Whether the coffee tree was first discovered indigenous in the mountains of Abyssinia, or in the Yemen district of Arabia, will probably always be a matter of contention. Many writers of Europe and Asia in the fifteenth century, when coffee was first brought to the attention of the people of Europe, agree on Arabia; but there is good reason to believe the plant was brought to Arabia from Abyssinia in the sixth century.

Once all the coffee of Arabia went to the outside world through the port of Mocha on the eastern coast of the Red Sea. Mocha, which never raised any coffee, is no longer of commercial importance; but its name has been permanently attached to the coffee of this country.

Mocha (*Moka*, or *Morkha*) coffee (i. e. *Coffea arabica*) is raised principally in the vilayet of Yemen, a district of southeastern Arabia. Yemen extends from the north, southerly along the line of the Red Sea, nearly to the Gulf of Aden. With the exception of a narrow strip of land along the shores of the Red Sea, the Strait of Bab-el-Mandeb, and the Gulf of Aden, it is a rugged, mountainous region, in which innumerable small valleys at high elevations are irrigated by waters from the melting snows of the mountains.

Coffee can be successfully grown in any part of Yemen, but its cultivation is confined to a few widely scattered districts, and the acreage is not large. The principal coffee regions are in the mountains between Taiz and Ibb, and between Ibb and Yerim, and Yerim and Sanaa, on the caravan route from Taiz to Sanaa; be-



WILD KAFFA COFFEE TREES NEAR ADIS ABEBA

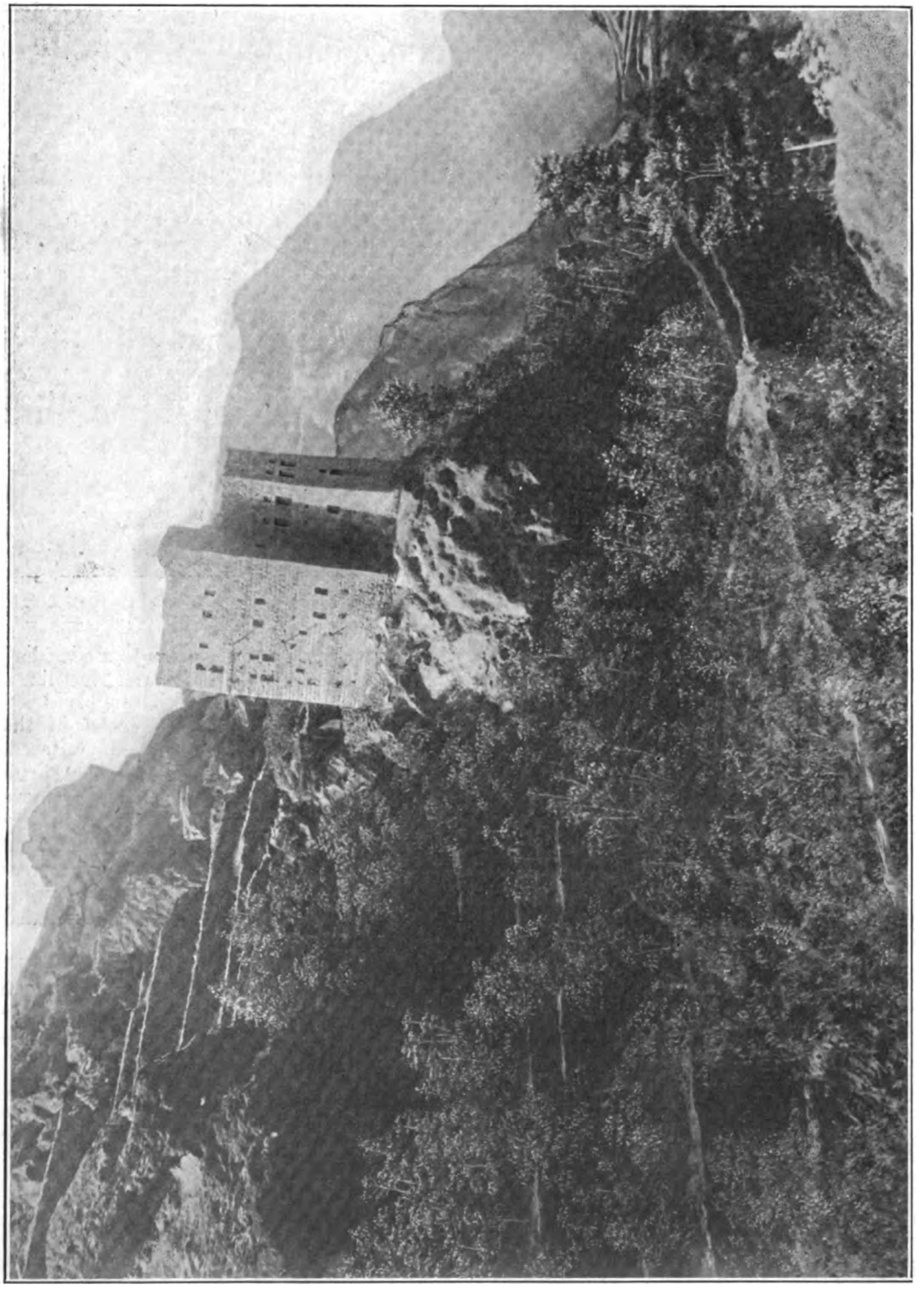
tween Zabeed and Ibb, on the route from Taiz to Zabeed; between Hajelah and Menakha, on the route from Hodeida to Sanaa, and in the wild mountain ranges both to the north and south of that route; between Beit-el-Fakih and Obal; and between Manakha and Batham to the north of Bajil. The plant does best at elevations ranging from 3,500 to 6,500 feet.

In the Yemen district, coffee is generally grown in small gardens. Large plantations, as they exist in other coffee-growing countries, are not seen in Arabia. Many of these small farms may be parts of a large estate belonging to some rich tribal chief. The native Arabs do not use coffee in the way it is used elsewhere in the world. They drink *kisher,* a beverage brewed from the husks of the berry and not from the bean. Consequently, the entire crop goes into export. But bad conditions of trade routes, political disturbances, and small regional wars, absence of good cultivation methods, and heavy transit taxes imposed by the government, have combined to restrict the production of Yemen coffee.

Land for the coffee gardens is selected on hill-slopes, and is terraced with soil and small walls of stone until it reaches up like an amphitheater — often to a considerable height. The soil is well fertilized. For sowing, the seeds are thoroughly dried in ashes, and after being placed in the ground, are carefully watched, watered, and shaded. In about a year the shrub has grown to a height of twelve or more inches. Seedlings in that condition are set out in the gardens in rows, about ten to thirteen feet apart. The young trees receive moisture from neighboring wells or from irrigation ditches, and are shaded by bananas.

At maturity the trees reach a height of ten or fifteen feet. Since they never lose all their leaves at one time, they appear always green, and bear at the same time flowers and fruits, some of which are still green while others are ripe or approaching maturity. Thus, in some districts, the the trees are considered to have two or even three crops a year. All the trees begin to bear about the end of the third year.

CUBA. Coffee can be grown in practically every island of the West Indies, but owing to the state of civilization in many of the lesser islands, little is produced for international trade, excepting



A RARE PICTURE SHOWING MOCHA COFFEE GROWING ON TERRACES IN YEMEN, ARABIA

in Jamaica, Guadeloupe, Haiti, the Dominican Republic, Trinidad, and Tobago. In past years a considerable quantity of good-quality coffee was produced in Cuba, the annual export in the decade of 1840 averaging 50,000,000 pounds. Severe hurricanes, adverse legislation, the rise of coffee-growing in Brazil, the increase in cultivation of sugar and other more profitable crops, practically eliminated Cuba from the international coffee-export trade.

MARTINIQUE. This is a name well known to coffee men, the world over, as the pioneer coffee-growing country of the western hemisphere. Gabriel de Clieu introduced the coffee plant to the island in 1723 by bringing it through many hardships from France. For a time, coffee flourished there, but now practically none is grown. Such coffee as bears the name Martinique in modern trade centers is produced in Guadeloupe, and is only shipped through Martinique.

JAMAICA. Coffee was introduced into Jamaica in 1730; and so highly was it regarded as a desirable addition to the agricultural resources of the island, that the British Parliament in 1732 passed a special act providing for the encouraging and fostering of its cultivation. Later, it became one of the great staples of the country. Disastrous floods in 1815, and the gradual exhaustion of the best lands since then, have brought about a decline of the industry, which is now confined to a few estates in the Blue Mountains and to scattered "settler" or peasant cultivation in the same districts but at lower altitudes.

The tree was formerly grown at all altitudes, from sea-level to 5,000 feet; but the best height for it is about 4,500 feet. Four parishes lead in coffee producing: Manchester, with an area of 5,045 acres; St. Thomas, with 2,315 acres; Clarendon, with 2,172 acres; St. Andrew, with 1,584 acres. Nine other parishes that raise coffee have less than 1,000 acres each under cultivation. There were 24,865 acres devoted to coffee in 1900. In addition, it was estimated that there were 80,000 acres suitable for the cultivation, nearly all being owned by the government.

DOMINICAN REPUBLIC. Coffee was once the leading staple in the Dominican Republic as in the adjoining Haitian Republic; but in recent years cacao, sugar, and tobacco have become the predominating crops. Said to have the world's richest and most productive soil, one-half of the republic's area is particularly suited to the cultivation of a good grade of coffee of the highland type. But political and industrial conditions have made for neglect of its cultivation by efficient methods. Lack of suitable roads has also militated against the development of the coffee industry.

In spite of many drawbacks, it is to be noted that, from the beginning of the twentieth century, the coffee-growing area has been gradually expanded until exports increased from less than 1,000,000 pounds to 5,029,316 pounds in 1918, although in the next two years there was a recession in the total exports to 1,358,825 pounds in 1920.

The principal plantations are in the vicinity of the town of Moca and in the

PICKING BLUE MOUNTAIN BERRIES, JAMAICA

districts of Santiago, Bani, and Barahona. Generally speaking, the methods of cultivation in the Dominican Republic are somewhat crude as compared with the practise in the larger countries of production in Central America and South America.

GUADELOUPE. Guadeloupe has an area of 619 square miles, and about one-third of this area is under cultivation. About 15,000 acres are in coffee, giving employment to upward of 10,000 persons. The average yield of a plantation of mature trees is about 535 pounds to the acre.

In the early years of the industry in Guadeloupe, production and export were considerable. From old records it appears that in 1784 the exports amounted to 7,500,000 pounds. During the closing years of the eighteenth century the annual exports were from 6,500,000 to 8,500,000 pounds, and in the beginning of the next century they registered about 6,000,000 pounds. Toward the middle of the nineteenth century the growing of sugar cane overtopped that of coffee in profit, and many planters abandoned coffee. After 1884, with the decadence of the sugar industry, coffee was again favored, the government giving substantial encouragement by paying bounties ranging from $15 to $19 per acre for all new coffee plantations.

In recent years, considerable *liberica* and *robusta* have been planted in place of the exhausted *arabica*.

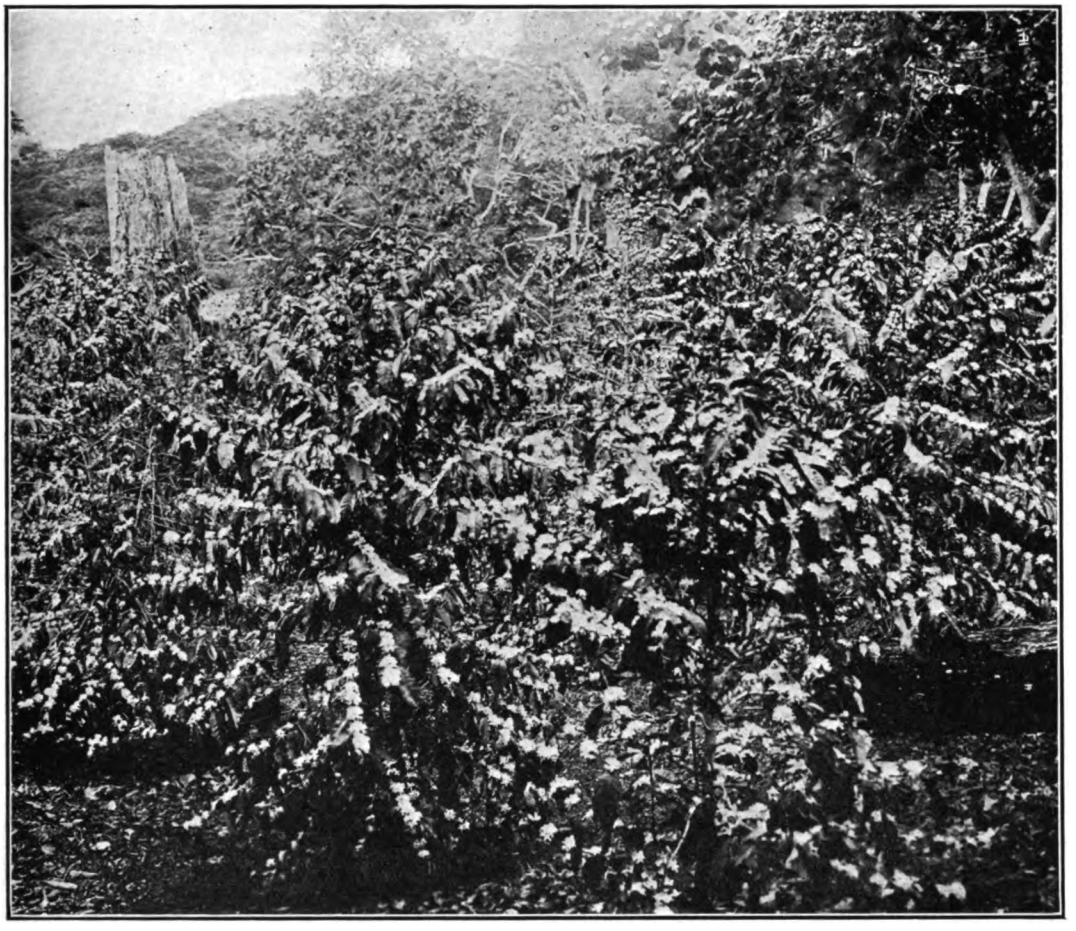
TRINIDAD AND TOBAGO. The islands of Trinidad and Tobago are small factors in international coffee trading. Coffee can be grown almost any place on the islands; but its cultivation is confined principally to the districts of Maracas, Aripo, and North Oropouche. Both the *arabica* and the *liberica* varieties are grown.

HONDURAS. Soil, surface, and climate in Honduras, as far as they relate to the cultivation of coffee, are similar to those of the adjoining regions of Central America. The tree grows in the uplands of the interior, thriving best at an altitude of from 1,500 to 4,000 feet. Scarcity of labor and insufficient means of transportation have been the chief obstacles in the way of the large development of the industry.

The departments of Santa Barbara, Copan, Cortez, La Paz, Choluteca, and El Paraiso have the principal plantations. The ports of shipment are Truxillo and Puerto Cortes. Annual production in recent years has been about 5,000,000 pounds. In 1889 the United States imported 3,322,502 pounds, but in 1915 its importations fell away to 665,912 pounds.

BRITISH HONDURAS. British Honduras has never undertaken to raise coffee on a commercial scale despite the fact that conditions are not unfavorable to its cultivation. It has failed to produce enough even for domestic consumption, importing

COFFEE PICKERS RETURNING FROM THE FIELDS, GUADELOUPE



THREE-YEAR-OLD COFFEE TREES IN BLOSSOM, PANAMA

most of what it has needed. Annual production, as recorded in recent years, has been upward of 10,000 pounds.

PANAMA. Panama presents a very favorable field for the growing of coffee. The best district is situated in the uplands of the district of Bugaba, where vast areas of the best lands for coffee-growing exist, and where climatic and other conditions are most favorable to its growth.

No shade is required in this country; and the only cultivation consists of three or four cleanings a year to keep down the weeds, as no plowing, etc., are necessary. Coffee matures from October to January. Water power being abundant, it is used for running all machinery.

The annual output of the province of Chiriqui, which produces the bulk of the coffee, is approximately 4,000 sacks of 100 pounds each; all of which is produced in the Boquete district at present, as the coffee planted in the Bugaba section is still young and unproductive. The local supply does not meet the domestic demand; and instead of exporting, a great deal is imported from adjoining countries, although there is a protective tariff of six dollars per hundred pounds.

THE GUIANAS. Coffee has had a precarious existence in the Guianas. Plants are said to have been brought by Dutch voyagers from Amsterdam in 1718 or 1720. They flourished in the new habitat to which they were introduced, and in 1725 were carried from Dutch Guiana into the district of Berbice in British Guiana and into French Guiana. There the berry was a considerable success for a time; Berbice coffee especially acquiring a good reputation; and when Demerara was settled, coffee became a staple of that region.

Shortage of native labor, and the difficulty of procuring cheap and capable workers from outside the country, ultimately compelled the practical abandonment of the crop in all three sections, Dutch, French, and British. In British Guiana it is now grown mainly for domestic consumption, and the same is true of French Guiana, which also imports.

From the time of its introduction, about 1718, until about 1880, the only coffee grown in Surinam, or Dutch Guiana, was the *Coffea arabica*. It was not a bountiful producer, and with labor scarce and unreliable, its cultivation was expensive. Therefore experiment was made with the *liberica* plant. This proved to be very satisfactory, growing luxuriantly, producing abundantly, and requiring minimum labor in care. In 1918 some 16,000,000 pounds were produced.

ECUADOR. Though not of great commercial importance, coffee in Ecuador grows on both the mainland and on the adjacent islands. The area planted to coffee is estimated at 32,000 acres having an aggregate of about 8,000,000 trees. The trees blossom in December, and the picking season is through April, May and June. Coffee ranks third in value among the exports of the country.

PERU. Although possessed of natural coffee land and climate, little has been done to develop the industry in Peru. A finely flavored coffee grows at an altitude of 7,000 feet, while that grown in the lowlands along the Pacific coast is not so desirable. Such small quantities as are grown are cultivated in the mountain districts of Choquisongo, Cajamarca, Perene, Paucartambo, Chaucghamayo, and Huanace. The Pacific-coast district of Pacesmayo also grows a not unimportant crop.

BOLIVIA. Comparatively little attention is given to coffee cultivation in Bolivia. Agricultural methods are crude, and are limited to cutting down weeds and undergrowth twice a year. The coffee is planted in small patches, or as hedges along the roads or around the fields of other crops. The first crop is picked at the end of one and a half or two years. The trees bear for fifteen to twenty years. The average yield is from three to eight pounds per tree. The best grades of coffee are grown at 2,000 to 6,000 feet above sea level.

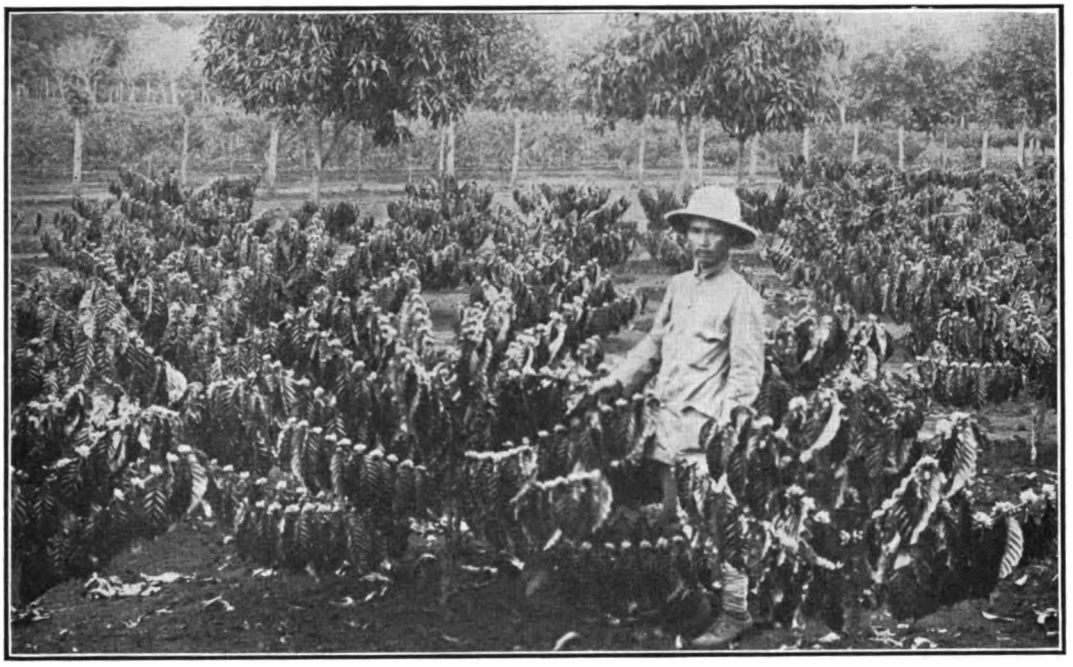
Coffee is cultivated in the departments of La Paz, Cochabamba, Santa Cruz, El Beni, and Chuquisca. In the department of Santa Cruz there are plantations in the provinces of Sara, Velasco, Chiquitos and Cordillera. In the Yungas and the Apolobamba districts of La Paz, its cultivation reaches the greatest importance, but even there is not of large proportions.

CHILE, PARAGUAY, AND ARGENTINA. Coffee is of minor, almost insignificant, importance in the agriculture of Chile, Paraguay, and Argentina. In Uruguay the climate is altogether unsuitable for it.

Argentina and Paraguay each have small growing districts. In the first named, only the provinces of Salta and Jujuy have, at the latest reports, a little more than 3,000 acres under cultivation. In Paraguay some householders have grown coffee in their yards solely for their own use. In the Paraguayan district of Altos, north of Asuncion, a small group of plantations was started before the outbreak of the World War, and produced about 300,000 pounds of coffee in a year.

CEYLON. Coffee planting in Ceylon was an important industry for a century, until the so-called Ceylon leaf disease attacked the plantations in 1869, and a few years later had practically destroyed all the trees of the country. Although coffee raising has continued since then, there has been, especially since the beginning of the twentieth century, a steady decline in acreage. There were 4,875 acres under cultivation in 1903, 2,433 acres in 1907, 1,389 in 1912, and 941.5 in 1919. Only 2,200 pounds were produced in 1917. However, the climate and soil of Ceylon seem adapted to coffee culture, and the experimental stations at Peradeniya and Anuradhapura have been experimenting in recent years with *robusta, canephora, Ugandae*, and a *robusta* hybrid for the purpose of reviving the industry in the country.

Ceylon is one of the oldest coffee-growing countries, the Arabs having experimented with it there, according to legend, long before the Portuguese seized the island in 1505. The Dutch, who gained control in 1658, continued the cultivation, and in 1690 introduced more systematic methods. They sent a few pounds in 1721 to Amsterdam, where the coffee brought a higher price than Java or Mocha. How-



ROBUSTA COFFEE GROWING ON THE SUZANNAH ESTATE, COCHIN-CHINA

ever, it was not until after the British occupied the island in 1796, that coffee growing was carried on extensively. The first British-owned upland plantation was started in 1825 by Sir Edward Barnes; and for more than fifty years thereafter coffee was one of the island's leading products. An orgy of speculation in coffee growing in Ceylon, in which £5,000,000 sterling are said to have been invested, culminated in 1845 in the bursting of the coffee bubble, and hundreds were ruined. The peak of the export trade was reached in 1873, when 111,495,216 pounds of coffee were sent out of the country. Even then, the plantations were suffering severely from the leaf disease, which had appeared in 1869; and by 1887, the coffee tree had practically disappeared from Ceylon. Ceylon's day in coffee was a cycle of fifty-odd years.

FRENCH INDO-CHINA. Coffee culture in French Indo-China is a comparatively small factor in international trade, although production is on the increase, particularly from those plantations planted to *robusta*, *liberica*, and *excelsa* varieties. The average annual export for the five-year period ended with 1918 was 516,978 pounds, nearly all of it going to France.

The first experiments with coffee growing were begun in 1887, near Hanoi in Tonkin. The seeds were of the *arabica* variety, brought from Réunion, and the production from the first years was distributed throughout the country to foster the industry. Eventually *arabica* was found unsuitable to the soil and climate, and experiments were begun with *robusta* and other hardier types.

A survey of the industry of the country in 1916 showed that the plant was being successfully grown in the provinces of Tonkin, Anam, and Cochin-China, and that altogether there were about 1,000,000 trees in bearing. The plantations are mostly in the foot-hills of the mountain ranges or on the slopes, although a few are located near the coast line at 1,000 feet, or even less, above sea-level.

The larger and more successful plantations follow advanced methods of planting and cultivating, while the government maintains experimental stations for the purpose of fostering the industry. It is believed that French Indo-China in coming years will assume an important position in the coffee trade of the world, particularly as a source of supply for France.

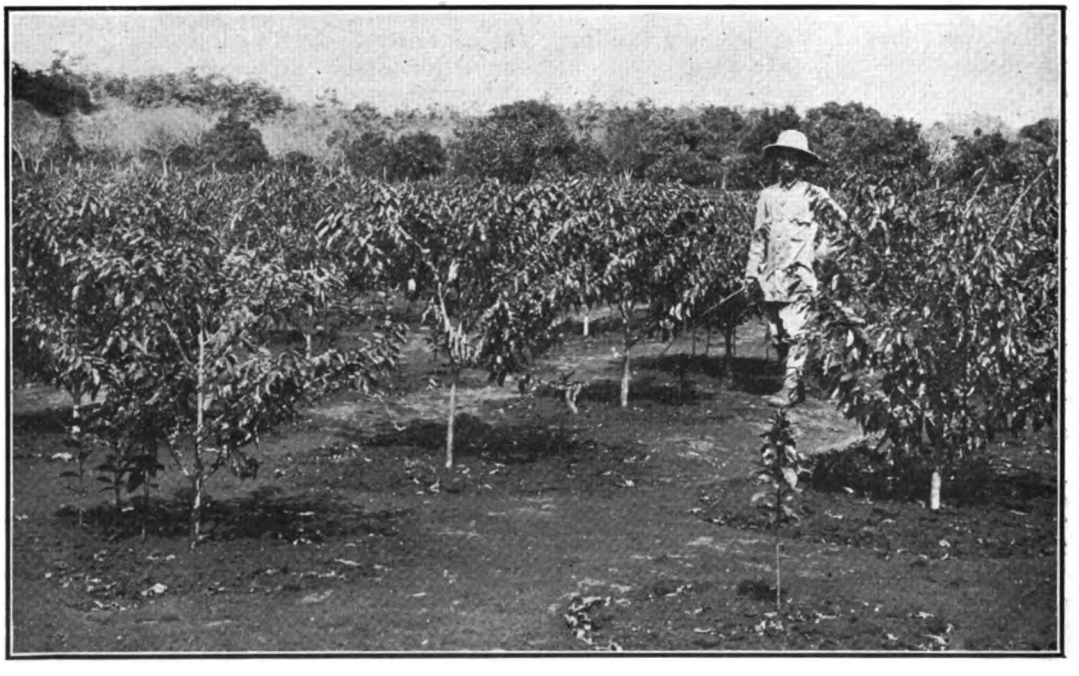
FEDERATED MALAY STATES, INCLUDING STRAITS SETTLEMENTS. Rubber has been the chief cause of the decline of coffee industry in the Federated Malay States. Since the closing years of the nineteenth century coffee has been steadily on the downward path in acreage and production, with the possible exception of parts of Straits Settlements, which in 1918 exported, mostly to England, some 3,500,000 pounds of good grade coffee. The other sections of the federation shipped less than 1,000,000 pounds.

In the early days, planters of the Malay Peninsula knew little about proper methods of cultivating, and depended mostly upon what they learned of the practises in Ceylon, which, unfortunately for them, were not at all suited to the Malay country. They secured their best crops from lowlands where peaty soil prevailed, and eventually all the coffee grown on the peninsula came from such regions.

Liberica is mostly favored, and is grown with some success as an inter-crop with cocoanuts and rubber. The *robusta* variety has also been introduced, but does not seem to do as well as the *liberica*. Between 2,300 and 2,600 acres, according to recent returns, have been under coffee as a catch-crop with cocoanuts, out of a total of 40,000 acres in cocoanut estates. One planter has been reported as making quite a success with this method of inter-cropping for coffee, but it is not generally approved.

There has been a general decline in acreage, product, and exports since the closing years of the nineteenth century, until now the industry is regarded as practically at a stand-still and likely so to remain as long as rubber shall continue to hold the commercially high position to which it has attained. Unsatisfactory prices realized for the crop, poor growth of the trees in some localities, and the gradual weakening of the trees under rubber as they mature, are offered as the principal explanations of this decrease in acreage. Nearly all the Malay crop in recent years has been grown in Selangor, though Negri Sembilan, Pahang, and Perak continue as factors in the trade.

AUSTRALIA. Although Australia is a prospective coffee-growing country of large natural possibilities, the *Australian Year Book* for 1921 states that Queensland is the one state in which experiments have been tried, and that in 1919-20 there were only twenty-four acres under cultivation. Queensland soils are of volcanic origin, exceptionally rich, and support



COFFEE TREES OF THE BOURBON VARIETY, FRENCH INDO-CHINA

PICKING COFFEE ON A NORTH QUEENSLAND PLANTATION

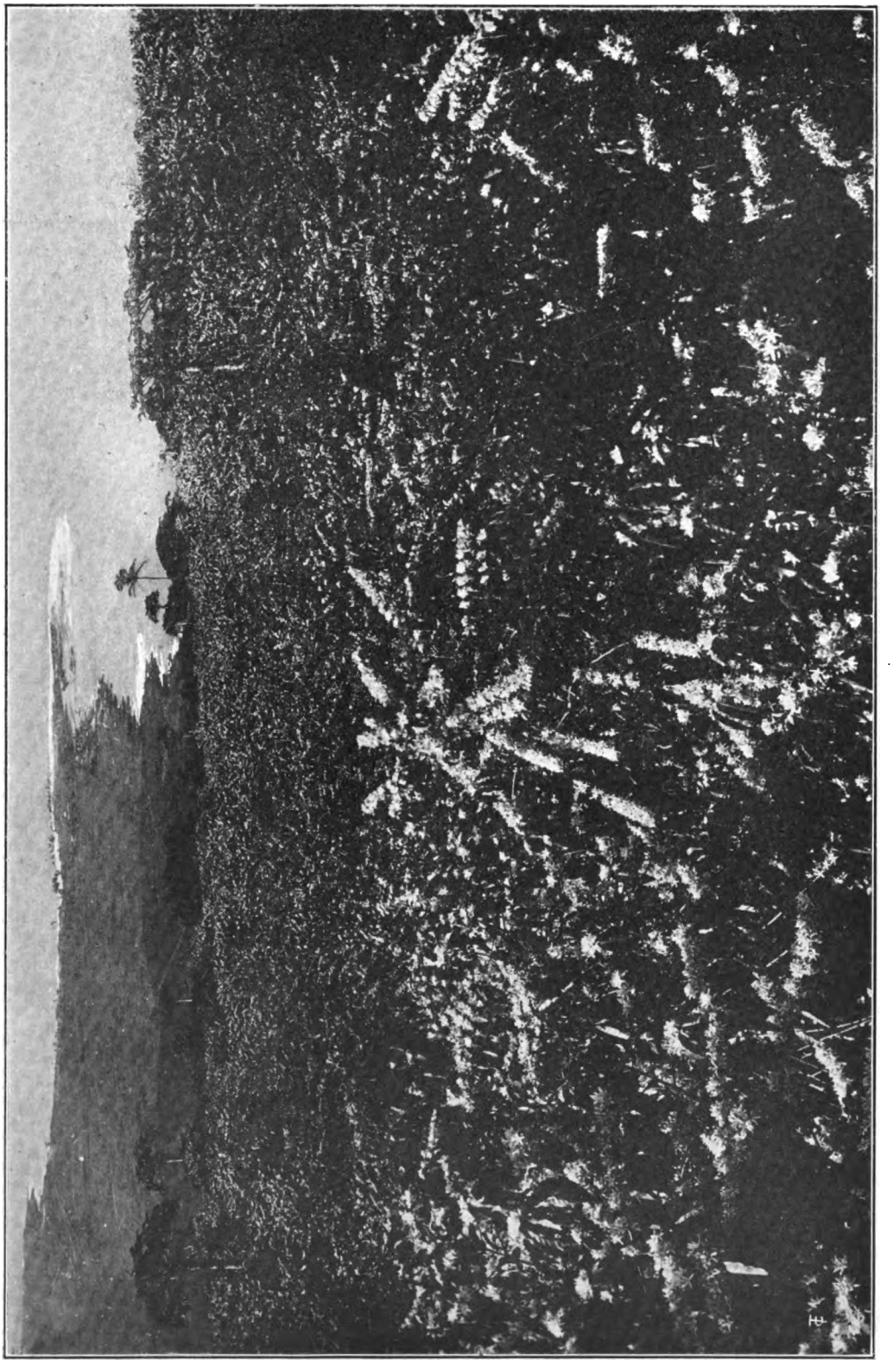
trees that are vigorous and prolific with a bean of fine quality. The *arabica* is chiefly cultivated, and the trees can be successfully grown on the plains at sea-level as well as up to a height of 1,500 or 2,000 feet. The trees mature earlier than in some other countries. Planted in January, they frequently blossom in December of the next year, or a month later, and yield a small crop in July or August; that is, in about two years and a half from the time of planting. The bean closely resembles the choice Blue Mountain coffee of Jamaica. For coffee cultivation the labor cost is almost prohibitive.

As much as fifteen hundredweight of beans per acre have been gathered from trees in North Queensland; and for years the average was ten hundredweight per acre. After thirty years of cultivation, no signs of disease have appeared. At late as 1920, the government was proposing to make advances of fourteen cents a pound upon coffee in the parchment to encourage the development of the industry to a point where it would be possible for local coffee growers to capture at least the bulk of the commonwealth's import coffee trade of 2,605,240 pounds.

Coffee grows well in most all the islands of the Pacific Ocean, and in some of them, as in the Philippines and Hawaii, the industry in past years reached considerable importance.

HAWAII. Coffee has been grown in Hawaii since 1825, from plants brought from Brazil. It has also been said that seed was brought by Vancouver, the British navigator, on his Pacific exploration voyage, 1791 - 94. Not, however, until 1845 was an official record made of the crop, which was then 248 pounds. The first plantations, started on the low levels, near the sea, did not do well; and it was not until the trees were planted at elevations of from 1,000 to 3,000 feet above sea-level that better returns were obtained.

Coffee is grown on all the islands of the group, but nowhere to any great extent except on Hawaii, which produces ninety-five percent of the entire crop. Next in importance, though far behind, is the island of Oahu. On Hawaii there are four principal coffee districts, Kona, Hamakua, Puna, and Olaa. About four-fifths of the total output of the islands is produced in Kona. At one time there were considerable coffee areas in Maui



COFFEE IN BLOSSOM, CAPTAIN COOK COFFEE COMPANY ESTATE, KEALAKEKUA, KONA, HAWAII

and Kauai, but sugar cane eventually there took the place of coffee.

The Kona coffee district extends for many miles along the western slope of the island of Hawaii and around famous Kealakekua Bay. The soil is volcanic, and even rocky; but coffee trees flourish surprisingly well among the rocks, and are said to bear a bean of superior quality.

Coffee trees in Kona are planted principally in the open, though sometimes they are shaded by the native *kukui* trees. They are grown from seed in nurseries; and the seedlings, when one year old, are transplanted in regular lines nine feet apart. In two years a small crop is gathered, yielding from five to twelve bags of cleaned coffee per acre. At three years of age the trees produce from eight to twenty bags of cleaned coffee per acre, and from that time they are fully matured. The ripening season is between September and January, and there are two principal pickings. Many of the trees are classed as wild; that is, they are not topped, and are cultivated in an irregular manner and are poorly cared for; but they yield 700 or 800 pounds per acre. The fruit ripens very uniformly, and is picked easily and at slight expense.

It is calculated that in the Hawaiian group more than 250,000 acres of good coffee land are available and about 200,000 acres more of fair quality. Comparatively little of this possible acreage has been put to use. According to the census of 1889, there were then 6,451 acres devoted to coffee, having, young and old, 3,225,743 bearing trees. The yield, in that census year, was 2,297,000 pounds, of which 2,112,650 pounds were credited to Hawaii, the small remainder coming from Maui, Oahu, Kauai, and Molokai.

A blight in 1855 - 56 set back the industry, many plantations being ruined and then given over to sugar cane. After the blight had disappeared, the plantations were re-established, and prosperity continued for years. Following the American occupation of the islands in 1898, came another period of depression. With the loss of the protective tariff that had existed, prices fell to an unremunerative figure; and the more profitable sugar cane was taken up again. After 1912, the increased demand for coffee, with higher prices, led again to hopes for the future

COFFEE GROWING UNDER SHADE, HAMAKUA, H. I.

of the industry. Planting was encouraged; and it has been demonstrated that from lands well selected and intelligently cultivated it is possible to have a yield of from 1,200 to 2,100 pounds per acre. Improvements have also been made in pulping and milling facilities. Many of the plantations are cultivated by Japanese labor.

Exports of coffee from Hawaii to the principal countries of the world in 1920 were 2,573,300 pounds.

PHILIPPINE ISLANDS. Spanish missionaries from Mexico are said to have carried the coffee plant to the Philippine Islands in the latter part of the eighteenth century. At first it was cultivated in the province of La Laguna; but afterward other provinces, notably Batangas and Cavite, took it up; and in a short time the industry was one of the most important in the islands. The coffee was of the *arabica* variety. In the middle of the eighteenth century, and after, the industry had a position of importance; several provinces produced profitable crops that contributed much to the wealth of the communities where the berry was cultivated. In those days the city of Yipa was an important trading center. In the period of its prime Philippine coffee enjoyed fine repute, especially in Spain, Great Britain, and China (at Hong Kong), those three countries being the largest consumers. At one time — in

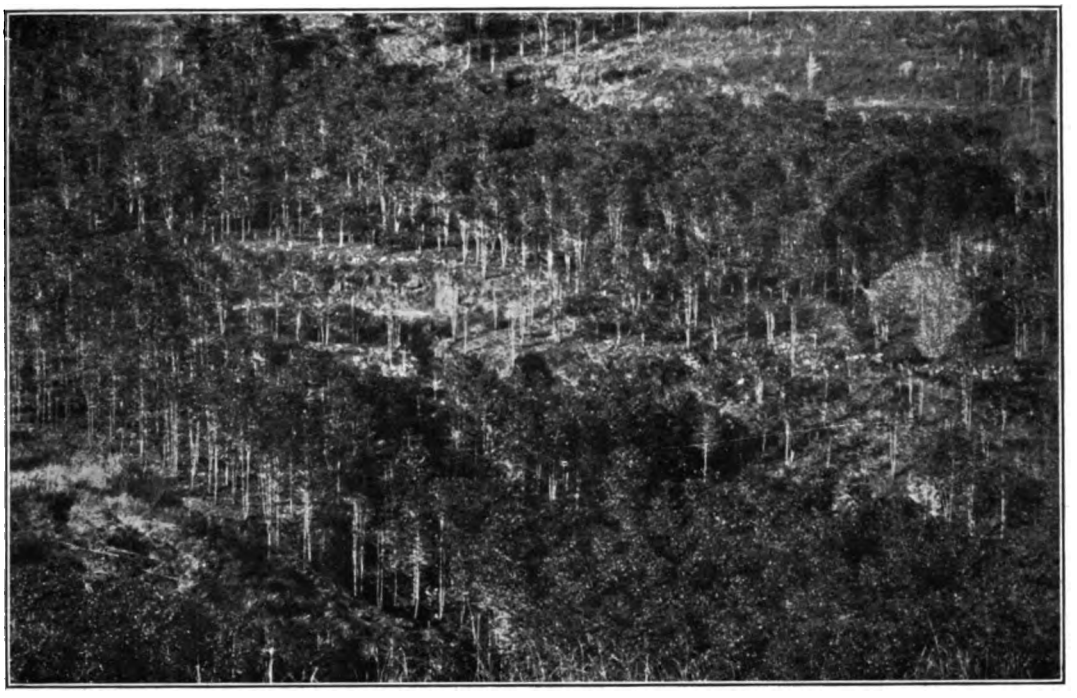
1883 and 1884 — the annual export was 16,000,000 pounds, which demonstrates the importance of the industry at the peak of its prosperity. The leaf blight appeared on the island about 1889, causing destruction from which there has not yet been complete recovery. The export of 3,086 pounds in 1917 shows the depths into which the industry had fallen.

The Bureau of Agriculture at Manila announced in 1915 that an effort was to be made to re-habilitate the coffee industry of the islands. Nothing came of the effort, which died a-borning. Since then, several attempts to introduce disease-resisting varieties of coffee from Java have failed because of lack of interest on the part of the natives.

Despite the misfortunes that have overwhelmed it in the past and are now retarding its growth, it is still believed that the industry in these islands may be rehabilitated. Conditions of soil and climate are favorable; land and labor are cheap, abundant, and dependable: railroads run into the best coffee regions, and good cart roads are in process of construction. Some plantations of consequence are still in existence, and serious consideration is being given to their development and to increasing their number.

GUAM. Coffee is one of the commonest wild plants on the little island of Guam. It grows around the houses like shade trees or flowering shrubs, and nearly every family cultivates a small patch. Climate and soil are favorable to it; and it flourishes, with abundant crops, from the sea-level to the tops of the highest hills. The plants are set in straight rows, from three and a half to seven feet apart, and are shaded by banana trees or by cocoanut

THE COFFEE TREE THRIVES IN THE LAVA SOIL OF SOUTH KONA, ISLAND OF HAWAII

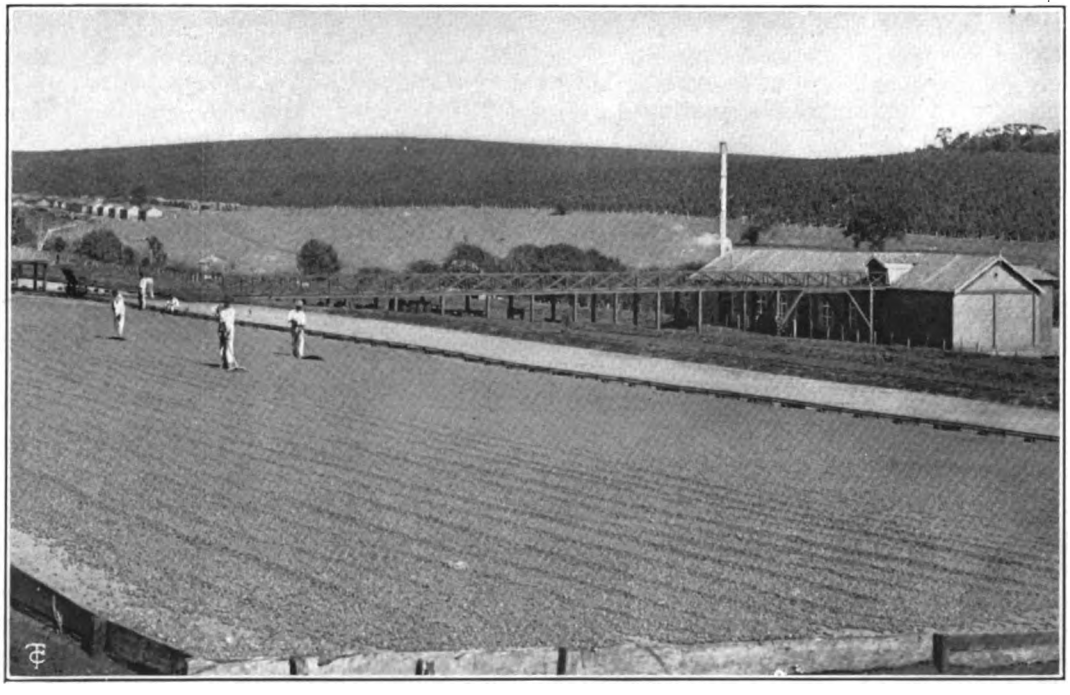


COFFEE PLANTATION NEAR SAGADA, BONTOC PROVINCE, P. I.

leaves stuck in the ground. There is no production for export, scarcely enough for home consumption.

OTHER PACIFIC ISLANDS. Other islands of the Pacific do not loom large in coffee growing, though New Caledonia gives promise as a producer, exporting 1,248,024 pounds in 1916, most of which was *robusta*. Tahiti produces a fair coffee, but in no commercial quantity. In the Samoan group there are plantations, small in number, in size, and in amount of production. Several islands of the Fiji group are said to be well adapted to coffee, but little is grown there and none for export.

OWNER'S RESIDENCE ADJOINING DRYING GROUNDS ON ONE OF THE LARGE ESTATES



DRYING GROUNDS, FAZENDA SANTA ADELAIDE, RIBEIRAO PRETO

COFFEE PREPARATION IN SAO PAULO, BRAZIL

Chapter XXI

PREPARING GREEN COFFEE FOR MARKET

Early Arabian methods of preparation — How primitive devices were replaced by modern methods — A chronological story of the development of scientific plantation machinery, and the part played by British and American inventors — The marvelous coffee package, one of the most ingenious in all nature — How coffee is harvested — Picking — Preparation by the dry and the wet methods — Pulping — Fermentation and washing — Drying — Hulling, or peeling, and polishing — Sizing, or grading — Preparation methods of different countries

LA ROQUE[1], in his description of the ancient coffee culture, and the preparation methods as followed in Yemen, says that the berries were permitted to dry on the trees. When the outer covering began to shrivel, the trees were shaken, causing the fully matured fruits to drop upon cloths spread to receive them. They were next exposed to the sun on drying-mats, after which they were husked by means of wooden or stone rollers. The beans were given a further drying in the sun, and then were submitted to a winnowing process, for which large fans were used.

Development of Plantation Machinery

The primitive methods of the original Arab planters were generally followed by the Dutch pioneers, and later by the French, with slight modifications. As the cultivation spread, necessity for more effective methods of handling the ripened fruit mothered inventions that soon began to transform the whole aspect of the business. Probably the first notable advance was in curing, when the West Indian process, or wet method, of cleaning the berries was evolved.

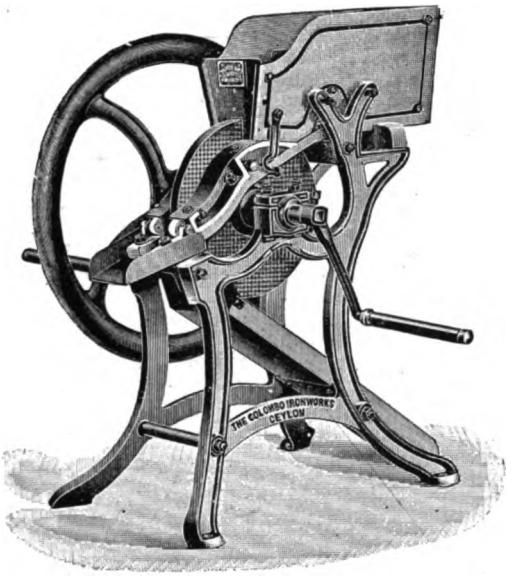
About the time that Brazil began the active cultivation of coffee, William Panter was granted the first English patent on a "mill for husking coffee." This was in 1775. James Henckel followed with an English patent, granted in 1806, on a coffee drier, "an invention communicated to him by a certain foreigner." The first American to enter the lists was Nathan Reed of Belfast, Me., who in 1822 was granted a United States patent on a coffee huller. Roswell Abbey obtained a United States patent on a huller in 1825; and Zenos Bronson, of Jasper County, Ga., obtained one on another huller in 1829. In the next few years many others followed.

John Chester Lyman, in 1834, was granted an English patent on a coffee huller employing circular wooden disks, fitted with wire teeth. Isaac Adams and Thomas Ditson of Boston brought out improved hullers in 1835; and James Meacock of Kingston, Jamaica, patented in England, in 1845, a self-contained machine for pulping, dressing, and sorting coffee.

William McKinnon began, in 1840, the manufacture of coffee plantation machinery at the Spring Garden Iron Works, founded by him in 1798 in Aberdeen, Scotland. He died in 1873; but the business continues as Wm. McKinnon & Co., Ltd.

About 1850 John Walker, one of the pioneer English inventors of coffee-plantation

[1] La Roque, Jean. *Voyage de l'Arabie Heureuse*, Paris, 1715 (p. 285).



WALKER'S ORIGINAL DISK PULPER, 1860
Much favored in Ceylon and India

machinery, brought out in Ceylon his cylinder pulper for Arabian coffee. The pulping surface was made of copper, and was pierced with a half-moon punch that raised the cut edges into half circles.

The next twenty years witnessed some of the most notable advances in the development of machinery for plantation treatment, and served to introduce the inventions of several men whose names will ever be associated with the industry.

John Gordon & Co. began the manufacture in London of the line of plantation machinery still known around the world as "Gordon make" in 1850; and John Gordon was granted an English patent on his improved coffee pulper in 1859.

Robert Bowman Tennent obtained English (1852) and United States (1853) patents on a two-cylinder pulper.

George L. Squier began the manufacture of plantation machinery in Buffalo, N. Y., in 1857. He was active in the business until 1893, and died in 1910. The Geo. L. Squier Manufacturing Co. still continues as one of the leading American manufacturers of coffee-plantation machinery.

Marcus Mason, an American mechanical engineer in San José, Costa Rica, invented (1860) a coffee pulper and cleaner which became the foundation stone of the extensive plantation-machinery business of Marcus Mason & Co., established in 1873 at Worcester, Mass.

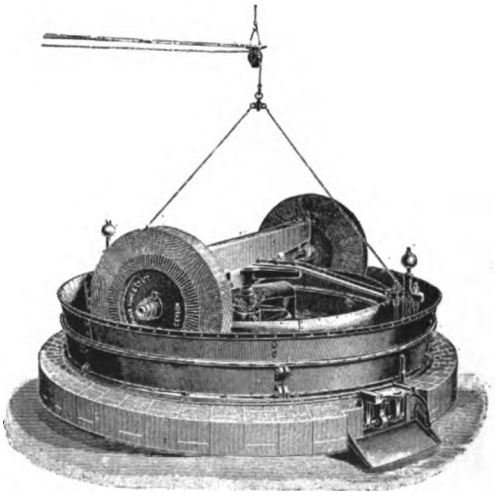
John Walker was granted (1860) an English patent on a disk pulper in which the copper pulping surface was punched, or knobbed, by a blind punch that raised rows of oval knobs but did not pierce the sheet, and so left no sharp edges. During Ceylon's fifty years of coffee production, the Walker machines played an important part in the industry. They are still manufactured by Walker, Sons & Co., Ltd., of Colombo, and are sold to other producing countries.

Alexius Van Gulpen began the manufacture of a green-coffee-grading machine at Emmerich, Germany, in 1860.

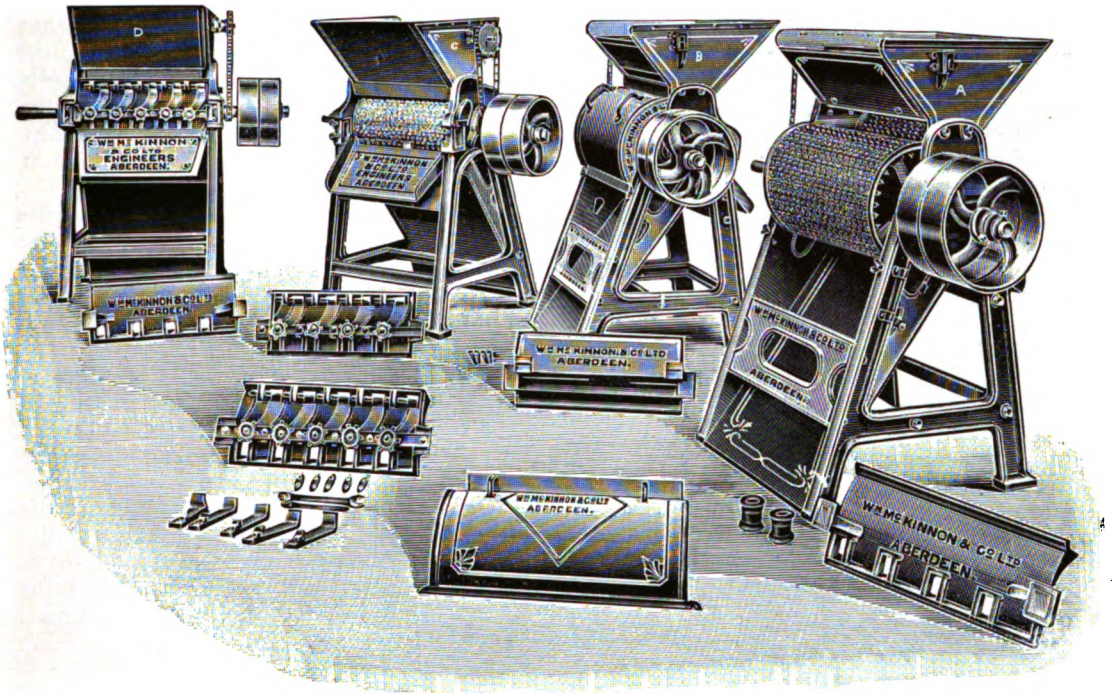
Following Newell's United States patents of 1857 - 59, sixteen other patents were issued on various types of coffee-cleaning machines, some designed for plantation use, and some for treating the beans on arrival in the consuming countries.

James Henry Thompson, of Hoboken, and John Lidgerwood were granted, in 1864, an English patent on a coffee-hulling machine. William Van Vleek Lidgerwood, American chargé d'affaires at Rio de Janeiro, was granted an English patent on a coffee hulling and cleaning machine in 1866. The name Lidgerwood has long been familiar to coffee planters. The Lidgerwood Manufacturing Co., Ltd., has its headquarters in London, with factory in Glasgow. Branch offices are maintained at Rio de Janeiro, Campinas, and in other cities in coffee-growing countries.

Probably the name most familiar to coffee men in connection with plantation



EARLY ENGLISH COFFEE PEELER
Largely used in India and Ceylon



GROUP OF ENGLISH CYLINDER COFFEE-PULPING MACHINES

methods is Guardiola. It first appears in the chronological record in 1872, when J. Guardiola, of Chocola, Guatemala, was granted several United States patents on machines for pulping and drying coffee. Since then, "Guardiola" has come to mean a definite type of rotary drying machine that — after the original patent expired — was manufactured by practically all the leading makers of plantation machinery. José Guardiola obtained additional United States patents on coffee hullers in 1886.

William Van Vleek Lidgerwood, Morristown, N. J., was granted an English patent on an improved coffee pulper in 1875.

Several important cleaning and grading machinery patents were granted by the United States (1876-1878) to Henry B. Stevens, who assigned them to the Geo. L. Squier Manufacturing Co., Buffalo, N. Y. One of them was on a separator, in which the coffee beans were discharged from the hopper in a thin stream upon an endless carrier, or apron, arranged at such an inclination that the round beans would roll by force of gravity down the apron, while the flat beans would be carried to the top.

C. F. Hargreaves, of Rio de Janeiro, was granted an English patent on machinery for hulling, polishing, and separating coffee, in 1879.

The first German patent on a coffee drying apparatus was granted to Henry Scolfield, of Guatemala, in 1880.

In 1885 Evaristo Conrado Engelberg of Piracicaba, São Paulo, Brazil, invented an improved coffee huller which, three years later, was patented in the United States. The Engelberg Huller Co. of Syracuse, N. Y., was organized the same year (1888) to make and to sell Engelberg machines.

Walker Sons & Co., Ltd., began, in 1886, experimenting in Ceylon with a Liberian disk pulper that was not fully perfected until twelve years later.

Another name, that has since become almost as well known as Guardiola, appears in the record in 1891. It is that of O'Krassa. In that year R. F. E. O'Krassa of Antigua, Guatemala, was granted an English patent on a coffee pulper. Additional patents on washing, hulling, drying, and separating machines were issued to Mr. O'Krassa in England and in the United States in 1900, 1908, 1911, 1912, and 1913.

The Fried. Krupp A. G. Grusonwerk, Magdeburg-Buckau, Germany, began the manufacture of coffee plantation machines about 1892. Among others it builds coffee pulpers and hulling and polishing machines of the Anderson (Mexican) and Krull (Brazilian) types.

Additional United States patents were granted in 1895 to Marcus Mason, assignor to Marcus Mason & Co., New York, on machines for pulping and polishing coffee. Douglas Gordon assigned patents on a coffee pulper and a coffee drier to Marcus Mason & Co. in 1904-05.

The names of Jules Smout, a Swiss, and Don Roberto O'Krassa, of Guatemala, are well known to coffee planters the world over because of their combined peeling and polishing machines.

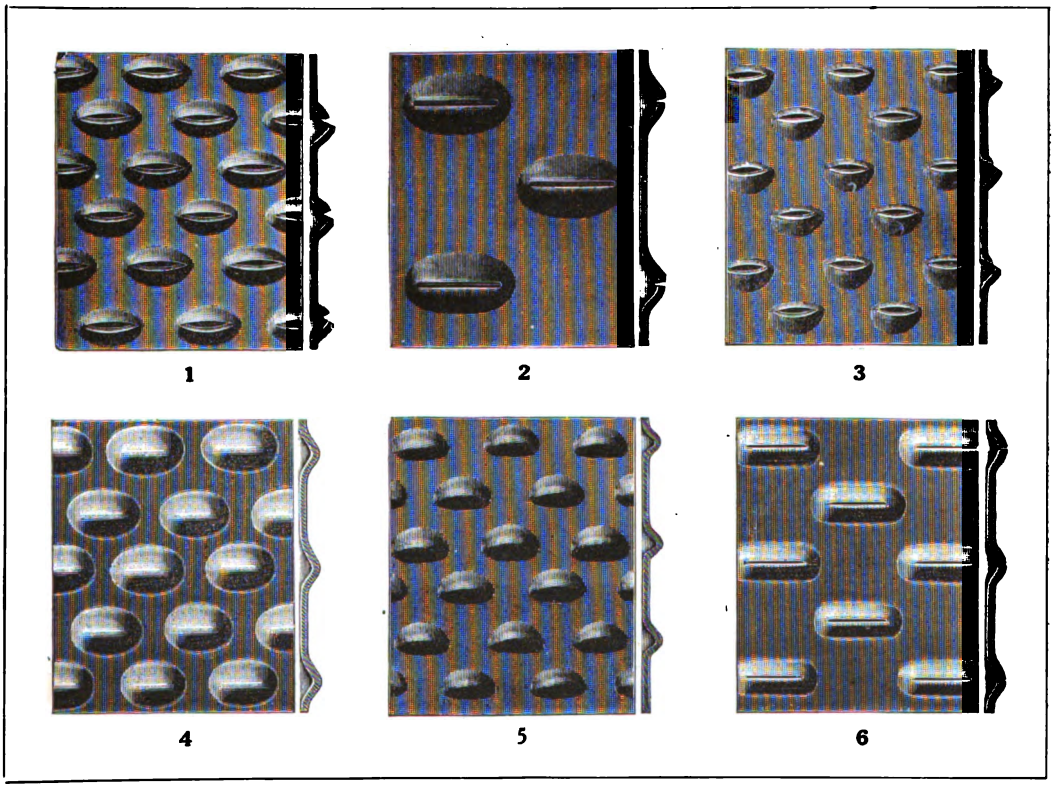
The Huntley Manufacturing Co., Silver Creek, N. Y., began in 1896 the manufacture of the Monitor line of coffee-grading-and-cleaning machines.

The Marvelous Coffee Package

It is doubtful if in all nature there is a more cunningly devised food package than the fruit of the coffee tree. It seems as if Good Mother Nature had said: "This gift of Heaven is too precious to put up in any ordinary parcel. I shall design for it a casket worthy of its divine origin. And the casket shall have an inner seal that shall safeguard it from enemies, and that shall preserve its goodness for man until the day when, transported over the deserts and across the seas, it shall be broken open to be transmuted by the fires of friendship, and made to yield up its aromatic nectar in the Great Drink of Democracy."

To this end she caused to grow from the heart of the jasmine-like flower, that first herald of its coming, a marvelous berry which, as it ripens, turns first from green to yellow, then to reddish, to deep crimson, and at last to a royal purple.

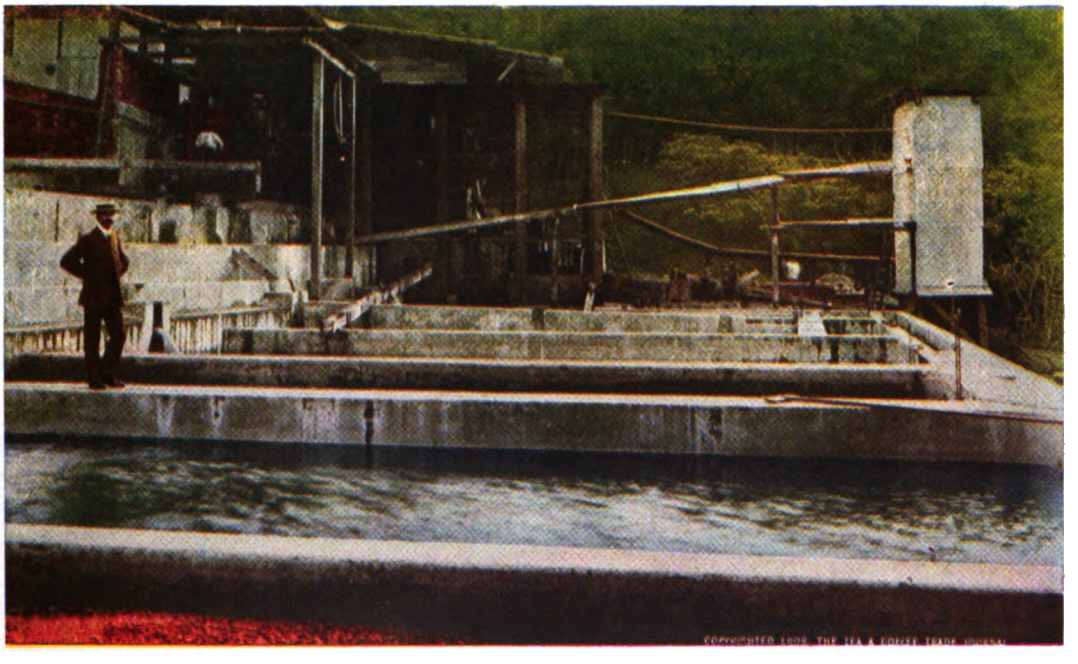
The coffee fruit is very like a cherry, though somewhat elongated and having in its upper end a small umbilicus. But mark with what ingenuity the package has been constructed! The outer wrapping is a thin, gossamer-like skin which encloses a soft pulp, sweetish to the taste, but of a mucilaginous consistency. This pulp in turn is wrapped about the inner-seal — called the parchment, because of its tough texture. The parchment encloses the magic bean in



SPECIMENS OF COPPER COVERS FOR PULPER CYLINDERS

1 — For Arabian coffee (*Coffea arabica*). 2 — For Liberian coffee (*Coffea liberica*). 3 — Also for Arabian. 4 — For *Coffea canephora*. 5 — For *Coffea robusta*. 6 — For larger Arabian, and for *Coffea Maragogipe*.

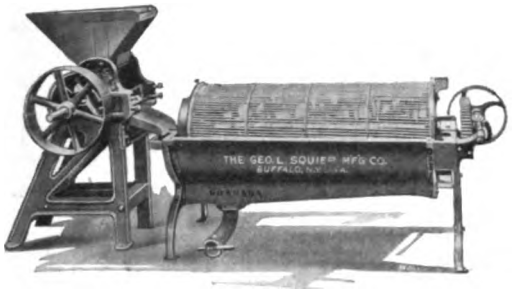
DRYING GROUNDS, PULPING HOUSE, AND FERMENTATION VATS, BOA VISTA, BRAZIL



PULPING HOUSE AND FERMENTATION TANKS, COSTA RICA

COFFEE PREPARATION IN CENTRAL AND SOUTH AMERICA

its last wrapping, a delicate silver-colored skin, not unlike fine spun silk or the sheerest of tissue papers. And this last wrapping is so tenacious, so true to its guardian-



GRANADA UNPULPED COFFEE SEPARATOR
Shown in combination with a Guatemala coffee pulper

ship function, that no amount of rough treatment can dislodge it altogether; for portions of it cling to the bean even into the roasting and grinding processes.

Coffee is said to be "in the husk," or "in the parchment," when the whole fruit is dried; and it is called "hulled coffee" when it has been deprived of its hull and peel. The matter forming the fruit, called the coffee berry, covers two thin, hard, oval seed vessels held together, one to the other, by their flat sides. These seed vessels, when broken open, contain the raw coffee beans of commerce. They are usually of a roundish oval shape, convex on the outside, flat inside, marked longitudinally in the center of the flat side with a deep incision, and wrapped in the thin pellicle known as the silver skin. When one of the two seeds aborts, the remaining one acquires a greater size, and fills the interior of the fruit, which in that case, of course, has but one cellule. This abortion is common in the *arabica* variety, and produces a bean formerly called *gragé* coffee, but now more commonly known as peaberry, or male berry.

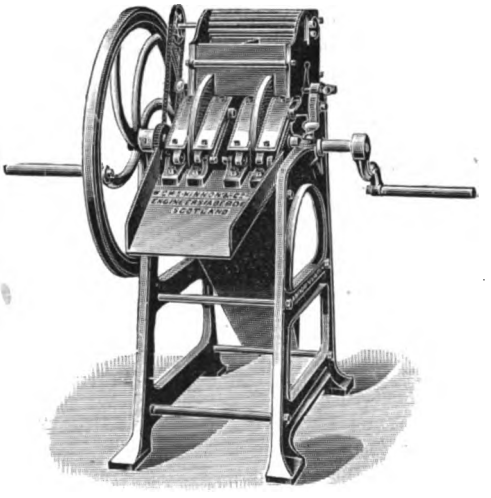
The various coverings of the coffee beans are almost always removed on the plantations in the producing countries. Properly to prepare the raw beans, it is necessary to remove the four coverings — the outer skin, the sticky pulp, the parchment, or husk, and the closely adhering silver skin.

There are two distinct methods of treating the coffee fruits, or "cherries." One process, the one that until recent years was in general use throughout the world, and is still in many producing countries, is known as the dry method. The coffee prepared in this way is sometimes called "common," "ordinary," or "natural," to distinguish it from the product that has been cleaned by the wet or washed method. The wet method, or, as it is sometimes designated, the "West Indian process" (W.I.P.) is practised on all the large modern plantations that have a sufficient supply of water.

In the wet process, the first step is called pulping; the second is fermentation and washing; the third is drying; the fourth is hulling or peeling; and the last, sizing or grading. In the dry process, the first step is drying; the second hulling; and the last, sizing or grading.

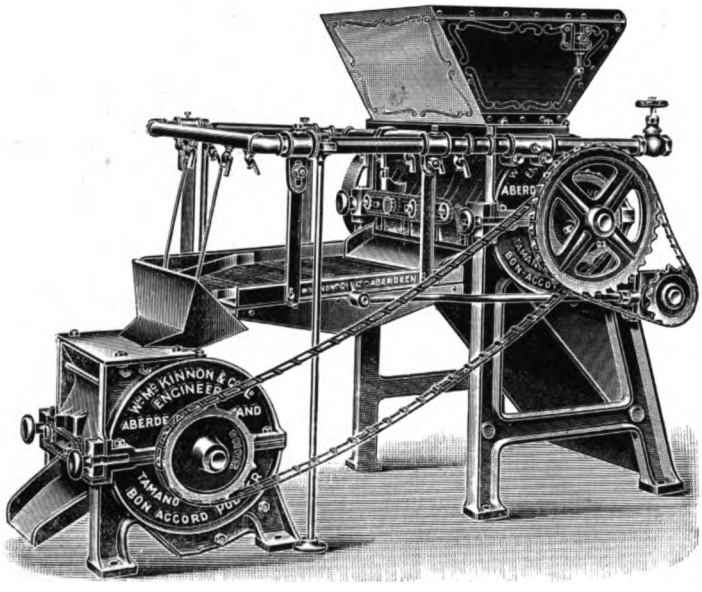
Harvesting

The coffee cherry ripens about six to seven months after the tree has flowered, or blossomed; and becomes a deep purplish-crimson color. It is then ready for picking. The ripening season varies throughout the world, according to climate and altitude. In the state of São Paulo, Brazil, the harvesting season lasts from May to September; while in Java, where three crops are produced annually, harvesting is almost a continuous process throughout the year. In Colombia the harvesting seasons are March and April, and November and December. In Guatemala the crops are gathered from October through December; in Venezuela, from November through March. In Mexico the coffee is harvested from November to January; in Haiti the harvest extends from November to March; in Arabia, from September to March;



HAND-POWER DOUBLE-DISK PULPER

in Abyssinia, from September through November. In Uganda, Africa, there are two main crops, one ripening in March and the other in September, and picking is carried on during practically every month except December and January. In India the fruit is ready for harvesting from October to January.



TANDEM COFFEE PULPER OF ENGLISH MAKE
Being a combination of a Bon-Accord-Valencia pulper with a Bon-Accord repassing machine

Picking

The general practise throughout the world has been to hand-pick the fruit; although in some countries the cherries are allowed to become fully ripe on the trees, and to fall to the ground. The introduction of the wet method of preparation, indeed, has made it largely unnecessary to hand-pick crops; and the tendency seems to be away from this practise on the larger plantations. If the berries are gathered promptly after dropping, the beans are not injured, and the cost of harvesting is reduced.

The picking season is a busy time on a large plantation. All hands join in the work — men, women and children; for it must be rushed. Over-ripe berries shrink and dry up. The pickers, with baskets slung over their shoulders, walk between the rows, stripping the berries from the trees, using ladders to reach the topmost branches, and sometimes even taking immature fruit in their haste to expedite the work. About thirty pounds is considered a fair day's work under good conditions. As the baskets are filled, they are emptied at a "station" in that particular unit of the plantation; or, in some cases, directly into wagons that keep pace with the pickers. The coffee is freed as much as possible of sticks, leaves, etc., and is then conveyed to the preparation grounds.

A space of several acres is needed for the various preparation processes on the larger plantations; the plant including concrete-surfaced drying grounds, large fermentation tanks, washing vats, mills, warehouses, stables, and even machine shops. In Mexico this place is known as the *beneficio*.

Washed and Unwashed Coffee

Where water is plenty, the ripe coffee cherries are fed by a stream of water into a pulping machine which breaks the outer skins, permitting the pulpy matter enveloping the beans to be loosened and carried away in further washings. It is this wet separation of the sticky pulp from the beans, instead of allowing it to dry on them, to be removed later with the parchment in the hulling operation, that makes the distinction between washed and unwashed coffees. Where water is scarce the coffees are unwashed.

Either method being well done, does washing improve the strength and flavor?

Opinions differ. The soil, altitude, climatic influences, and cultivation methods of a country give its coffee certain distinctive drinking qualities. Washing immensely improves the appearance of the bean; it also reduces curing costs. Generally speaking, washed coffees will always command a premium over coffees dried in the pulp.

Whether coffee is washed or not, it has to be dried; and there is a kind of fermentation that goes on during washing and drying, about which coffee planters have differing ideas, just as tea planters differ over the curing of tea leaves. Careful scientific study is needed to determine how much, if any, effect this fermentation has on the ultimate cup value.

Preparation by the Dry Method

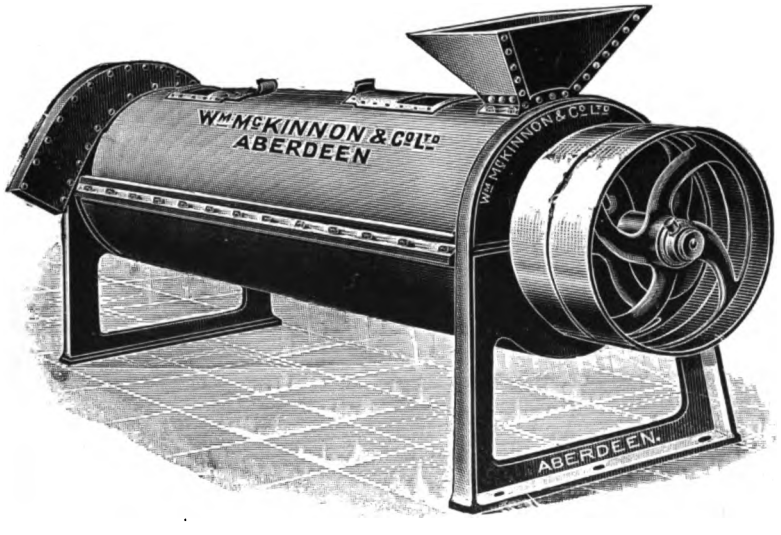
The dry method of preparing the berries is not only the older method, but is considered by some operators as providing a distinct advantage over the wet process, since berries of different degrees of ripeness can be handled at the same time. However, the success of this method is dependent largely on the continuance of clear warm weather over quite a length of time, which can not always be counted on.

In this process the berries are spread in a thin layer on open drying grounds, or barbecues, often having cement or brick surfaces. The berries are turned over several times a day in order to permit the sun and wind thoroughly to dry all portions. The sun-drying process lasts about three weeks; and after the first three days

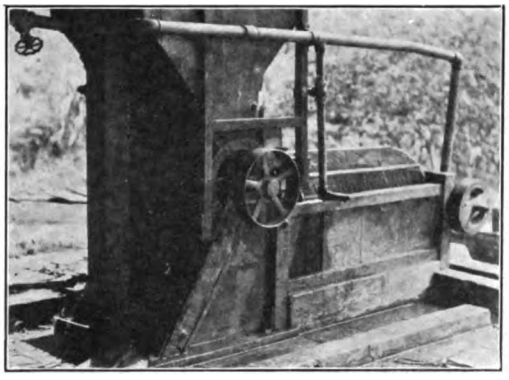
COSTA RICA VERTICAL COFFEE WASHER

of this period, the berries must be protected from dews and rains by covering them with tarpaulins, or by raking them into heaps under cover. If the berries are not spread out, they heat, and the silver skin sticks to the coffee bean, and frequently discolors it. When thoroughly dry, the berries are stored, unless the husks (outer skin and inner parchment) are to be removed at once. Hot air, steam, and other artificial drying methods take the place of natural sun-drying on some plantations.

In the dry method, the husks are removed either by hand (threshing and



CONTINUOUS WORKING HORIZONTAL COFFEE WASHER



COBAN PULPER IN TACHIRA, VENEZUELA

pounding in a mortar, on the smaller plantations) or by specially constructed machinery, known as hulling machines.

The Wet Method — Pulping

The wet method of preparation is the more modern form, and is generally practised on the larger plantations that have a sufficient supply of water, and enough money to instal the quite extensive amount of machinery and equipment required. It is generally considered that washing results in a better grade of bean.

In this method the cherries are sometimes thrown into tanks full of water to soak about twenty-four hours, so as to soften the outer skins and underlying pulp to a condition that will make them easily removable by the pulping machine — the idea being to rub away the pulp by friction without crushing the beans.

On the larger plantations, however, the coffee cherries are dumped into large concrete receiving tanks, from which they are carried the same day by streams of running water directly into the hoppers of the pulping machines.

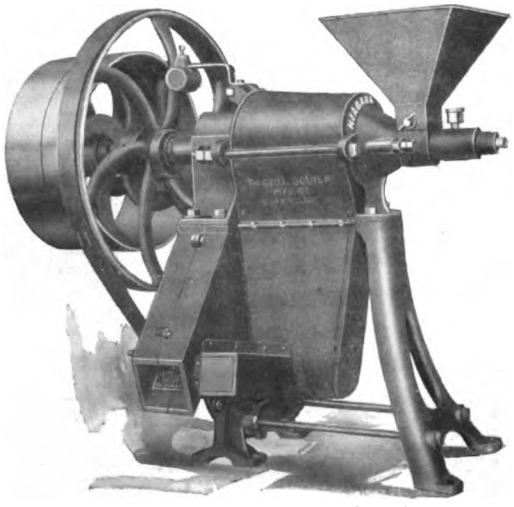
At least two score of different makes of pulping machines are in use in the various coffee-growing countries. Pulpers are made in various sizes, from the small hand-operated machine to the large type driven by power; and in two general styles — cylinder, and disk.

The cylinder pulper, the latest style — suggesting a huge nutmeg-grater — consists of a rotary cylinder surrounded with a copper or brass cover punched with bulbs. These bulbs differ in shape according to the species, or variety, of coffee to be treated — *arabica, liberica, robusta, canephora,* or what not. The cylinder rotates against a breast with pulping edges set at an angle. The pulping is effected by the rubbing action of the copper cover against the edges, or ribs, of the breast. The cherries are subjected to a rubbing and rolling motion, in the course of which the two parchment-covered beans contained in the majority of the cherries become loosened. The pulp itself is carried by the cover and is discharged through a pulp shoot, while the pulped coffee is delivered through holes on the breast. Cylinder machines vary in capacity from 400 pounds (hand power) to 4,800 pounds (motive power) per hour.

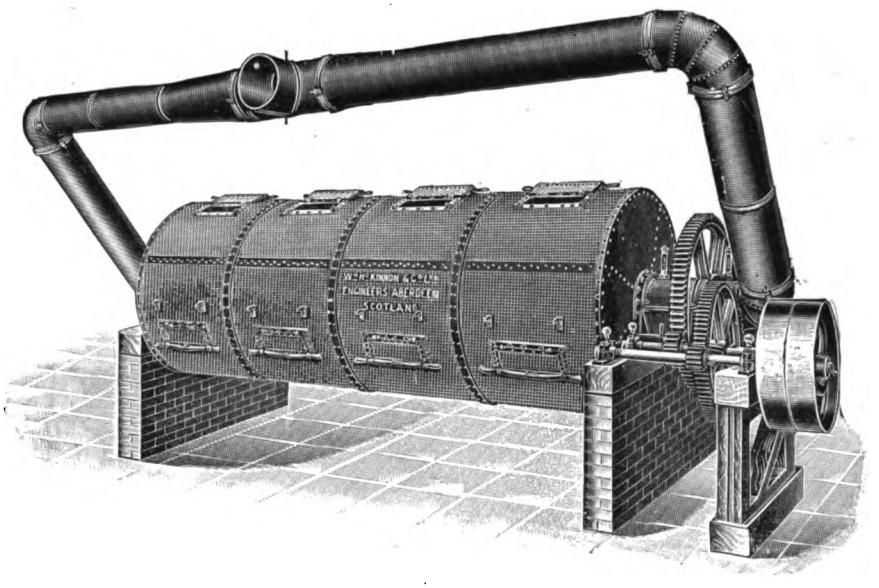
Some cylinder pulpers are double, being equipped with rotary screens or oscillating sieves, that segregate the imperfectly pulped cherries so that they may be put through again. Pulpers are also equipped with attachments that automatically move the imperfectly pulped material over into a repassing machine for another rubbing. Others have attachments partially to crush the cherries before pulping.

The breasts in cylinder machines are usually made with removable steel ribs; but in Brazil, Nicaragua, and other countries, where, owing to the short season and scarcity of labor, the planters have to pick, simultaneously, green, ripe, and over-ripe (dry) cherries, rubber breasts are used.

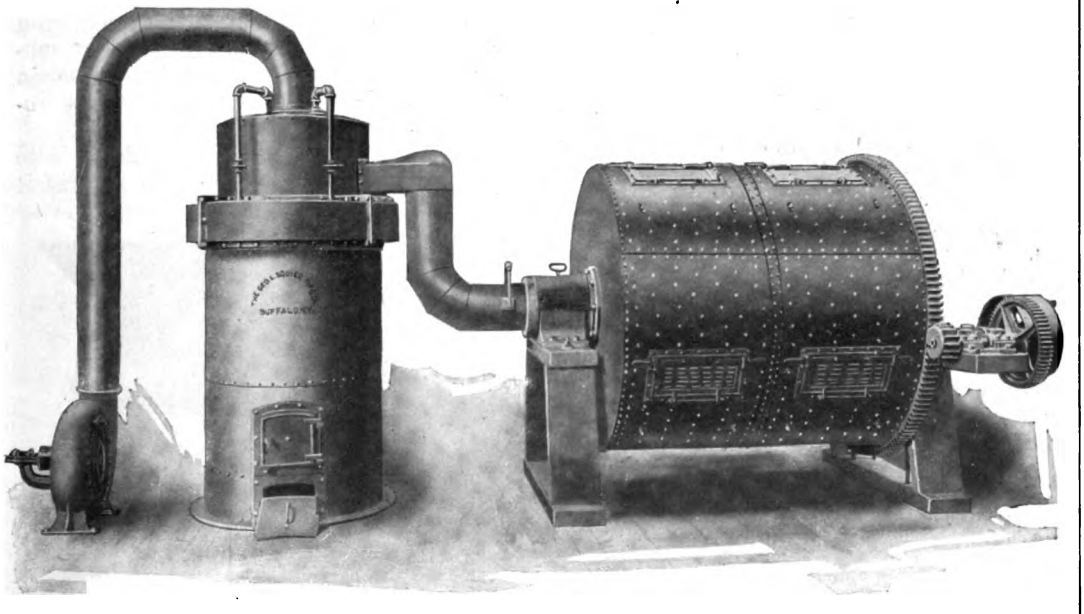
The disk pulper (the earliest type, having been in use more than seventy years) is the style most generally used in the Dutch East Indies and in some parts of Mexico. The results are the same as those obtained with the cylindrical pulper. The



NIAGARA POWER COFFEE HULLER



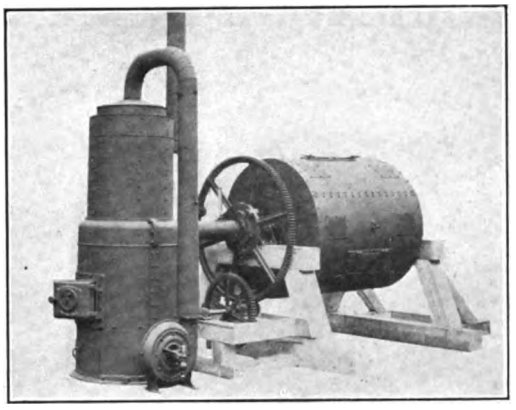
McKinnon's Guardiola Coffee Drier



The Squier-Guardiola Coffee Drier, With Direct-Fire Heater

BRITISH AND AMERICAN COFFEE DRIERS—GUARDIOLA SYSTEM

There are numerous makes of coffee driers based upon the original invention of José Guardiola of Chocola, Guatemala. In the two illustrated above both direct-fire heat and steam heat may be utilized



ANOTHER AMERICAN GUARDIOLA DRIER

disk machine is made with one, two, three, or four vertical iron disks, according to the capacity desired. The disks are covered on both sides with a copper plate of the same shape, and punched with blind punches. The pulping operation takes place between the rubbing action of the blind punches, or bulbs, on the copper plates and the lateral pulping bars fitted to the side cheeks. As in the cylinder pulper, the distance between the surface of the bulbs and the pulping bar may be adjusted to allow of any clearance that may be required, according to the variety of coffee to be treated.

Disk pulpers vary in capacity from 1,200 pounds to 14,000 pounds of ripe cherry coffee per hour. They, too, are made in combinations employing cylindrical separators, shaking sieves, and repassing pulpers, for completing the pulping of all unpulped or partially pulped cherries.

Fermentation and Washing

The next step in the process consists in running the pulped cherries into cisterns, or fermentation tanks, filled with water, for the purpose of removing such pulp as was not removed in the pulping machine. The saccharine matter is loosened by fermentation in from twenty-four to thirty-two hours. The mass is kept stirred up for a short time; and, in general practise, the water is drawn off from above, the light pulp floating at the top being removed at the same time. The same tanks are often used for washing, but a better practise is to have separate tanks.

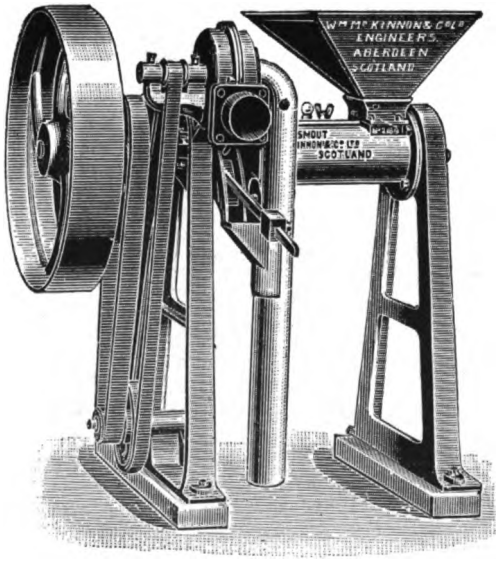
Some planters permit the pulped coffee to ferment in water. This is called the wet fermentation process. Others drain off the water from the tanks and conduct the fermenting operation in a semi-dry state, called the dry fermentation process.

The coffee bean, when introduced into the fermentation tanks, is enclosed in a parchment shell made slimy by its closely adhering saccharine coat. After fermentation, which not only loosens the remaining pulp but also softens the membranous covering, the beans are given a final washing, either in washing tanks or by being run through mechanical washers. The type of washing machine generally used consists of a cylindrical tub having a vertical spindle fitted with a number of stirrers, or arms, which, in rotating, stir and lift up the parchment coffee. In another type, the cylinder is horizontal; but the operation is similar.

Drying

The next step in preparation is drying. The coffee, which is still "in the parchment," but is now known as washed coffee, is spread out thinly on a drying ground, as in the dry method. However, if the weather is unsuitable or can not be depended upon to remain fair for the necessary length of time, there are machines which can be used to dry the coffee satisfactorily. On some plantations, the drying is started in the open and finished by machine. The machines dry the coffee in twenty-four hours, while ten days are required by the sun.

The object of the drying machine is to dry the parchment of the coffee so that it



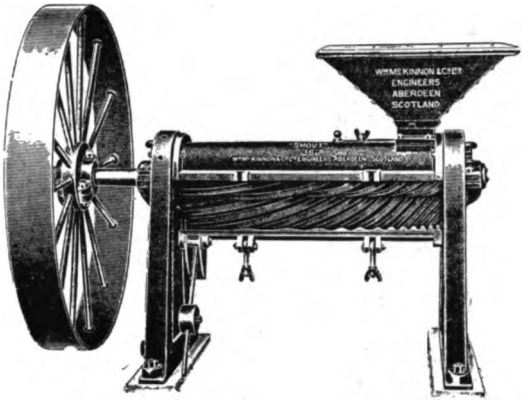
THE SMOUT PEELER AND POLISHER

may be removed as readily as the skin on a peanut; and this object is achieved in the most approved machines by keeping a hot current of air stirring through the beans. One of the best-liked types, the Guardiola, resembles the cylinder of a coffee-roasting machine. It is made of perforated steel plates in cylinder form, and is carried on a hollow shaft through which the hot air is circulated by a pressure fan. The beans are rotated in the revolving cylinder; and as the hot air strikes the wet coffee, it creates a steam that passes out through the perforations of the cylinder. Within the cylinder are compartments equipped with winged plates, or ribs, that keep the coffee constantly stirred up to facilitate the drying process. Another favorite is the O'Krassa. It is constructed on the principle just described, but differs in detail of construction from the Guardiola, and is able to dry its contents a few hours quicker. Hot air, steam, and electric heat are all employed in the various makes of coffee driers. A temperature from 65° to 85° centigrade is maintained during the drying process.

When thoroughly dry, the parchment can be crumbled between the fingers, and the bean within is too hard to be dented by finger nail or teeth.

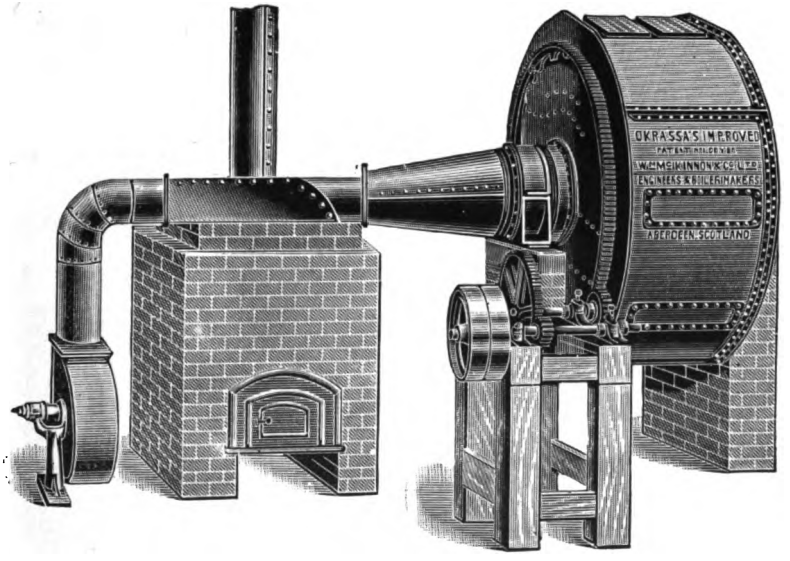
Hulling, Peeling, and Polishing

The last step in the preparation process is called hulling or peeling, both words accurately describing the purpose of the operation. Some husking machines for hulling or peeling parchment coffee are polishers as well. This work may be done on the plantation or at the port of shipment just before the coffee is shipped abroad. Sometimes the coffee is exported in parchment, and is cleaned in the country of consumption; but practically all coffee entering the United States arrives without its parchment.

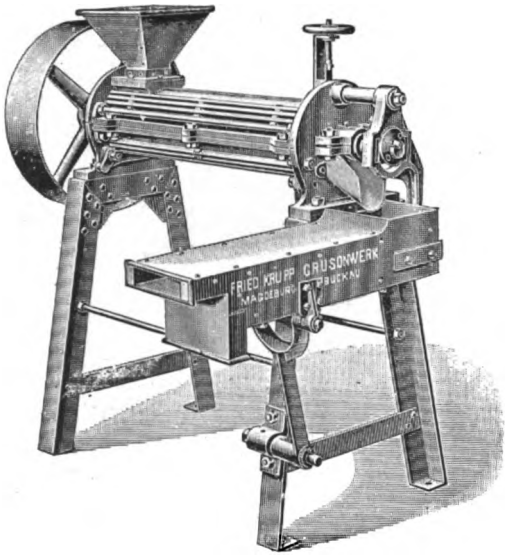


THE SMOUT PEELER AND POLISHER, WITH CYLINDER OPEN SHOWING CONE

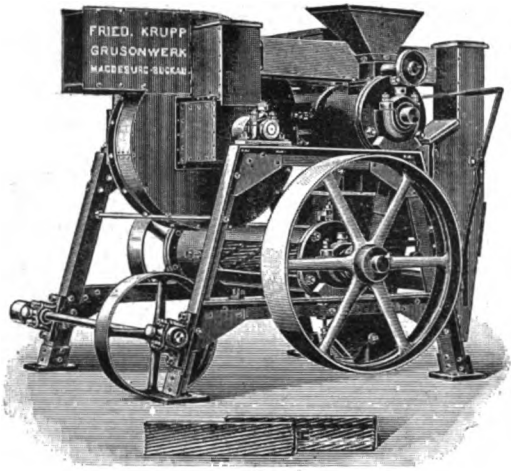
Peeling machines, more accurately named hullers, work on the principle of rubbing the beans between a revolving inner cylinder and an outer covering of woven wire. Machines of this type vary in construction. Some have screw-like inner cylinders, or turbines, others having plain cone-shaped cores on which are knobs and ribs that rub



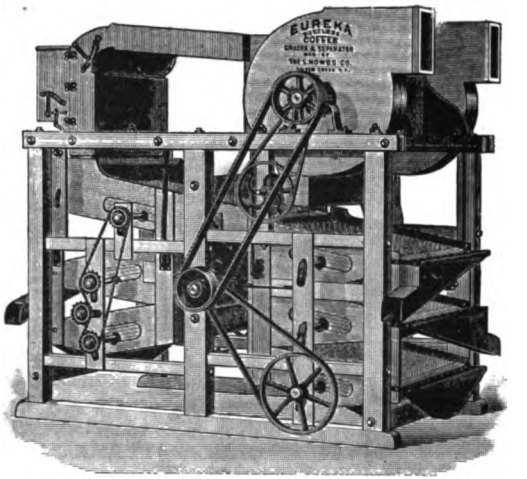
O'KRASSA'S COFFEE DRIER COMBINED WITH DIRECT-FIRE HEATER



KRULL HULLING MACHINE (German)

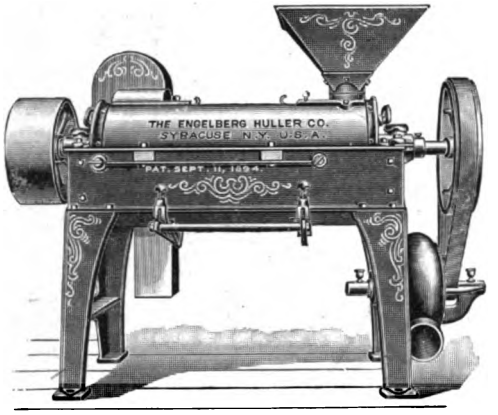


ANDERSON HULLING MACHINE (German)

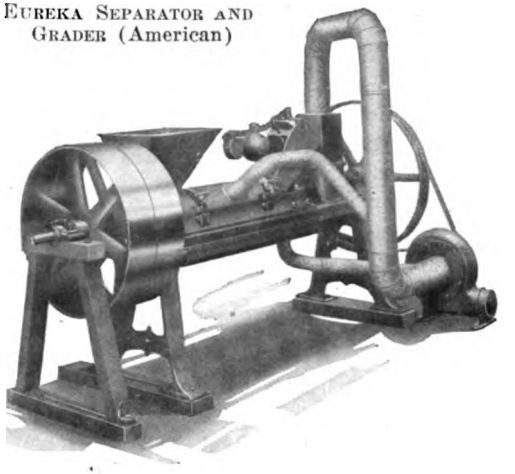


EUREKA SEPARATOR AND GRADER (American)

CARACOLILLO (PEABERRY) SEPARATOR (American)



ENGELBERG HULLER AND SEPARATOR (American)



THE AMERICAN COFFEE HULLER AND POLISHER

WELL KNOWN AMERICAN AND GERMAN HULLING AND SEPARATING MACHINES

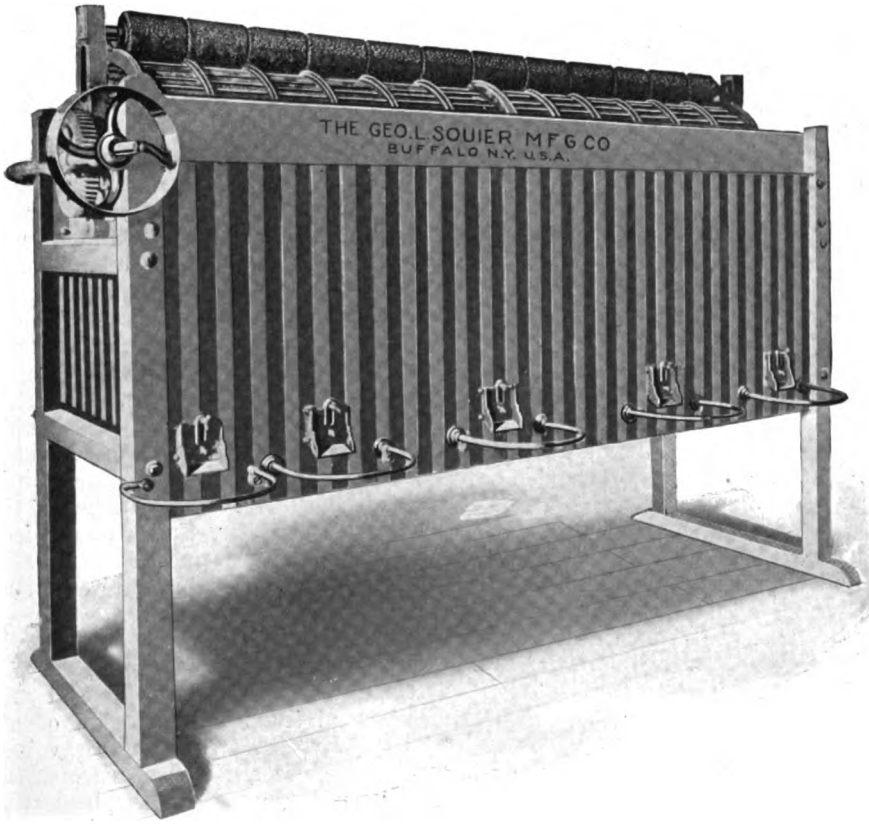
the beans against one another and the outer shell. Practically all types have sieve or exhaust-fan attachments, which draw the loosened parchment and silver skin into one compartment, while the cleaned beans pass into another.

Polishers of various makes are sometimes used just to remove the silver skin and to give the beans a special polish. Some countries demand a highly polished coffee; and to supply this demand, the beans are sent through another huller having a phosphor-bronze cylinder and cone. Much Guadeloupe coffee is prepared in this way, and is known as *café bonifieur* from the fact that the polishing machine is called in Guadeloupe the *bonifieur* (improver). It is also called *café de luxe.* Coffee that has not received the extra polish is described as *habitant;* while coffee in the parchment is known as *café en parché.* Extra polished coffee is much in demand in the London, Hamburg, and other European markets. A favorite machine for producing this kind of coffee is the Smout combined peeler and polisher, the invention of Jules Smout, a Swiss. Don Roberto O'Krassa also has produced a highly satisfactory combined peeler and polisher.

For hulling dry cherry coffee there are several excellent makes of machines. In one style, the hulling takes place between a rotating disk and the casing of the machine. In another, it takes place between a rotary drum covered with a steel plate punched with vertical bulbs, and a chilled iron hulling-plate with pyramidal teeth cast on the plate. Both are adjustable to different varieties of coffee. In still another type of machine, the hulling takes place between steel ribs on an internal cylinder, and an adjustable knife, or hulling blade, in front of the machine.

Sizing or Grading

The coffee bean is now clean, the processes described in the foregoing having removed the outer skin, the saccharine pulp, the parchment, and the silver skin. This is the end of the cleaning operations; but



EL MONARCA COFFEE CLASSIFIER

Old rope-drive transmission on Finca Ona.

Hydro-electric power plant on Finca Ona.

HYDRO-ELECTRIC INSTALLATION ON A GUATEMALA FINCA

there are two more steps to be taken before the coffee is ready for the trade of the world — sizing and hand-sorting. These two operations are of great importance; since on them depends, to a large extent, the price the coffee will bring in the market.

Sizing, or grading by sizes, is done in modern commercial practise by machines that automatically separate and distribute the different beans according to size and form. In principle, the beans are carried across a series of sieves, each with perforations varying in size from the others; the beans passing through the holes of corresponding sizes. The majority of the machines are constructed to separate the beans into five or more grades, the principal grades being triage, third flats, second flats, first flats, and first and second peaberries. Some are designed to handle "elephant" and "mother" sizes. The grades have local nomenclature in the various countries.

After grading, the coffee is picked over by hand to remove the faulty and discolored beans that it is almost impossible to remove thoroughly by machine. The higher grades of coffee are often double-picked; that is, picked over twice. When this is done on a large scale, the beans are generally placed on a belt, or platform, that moves at a regulated speed before a line of women and children, who pick out the undesirable beans as they pass on the moving belt. There are small machines of this type built for one person, who operates the belt mechanism by means of a treadle.

Preparation in the Leading Countries

The foregoing description tells in general terms the story of the most approved methods of harvesting, shelling, and cleaning the coffee beans. The following paragraphs will describe those features of the processes that are peculiar to the more important large producing countries and that differ in details or in essentials from the methods just outlined.

In the Western Hemisphere

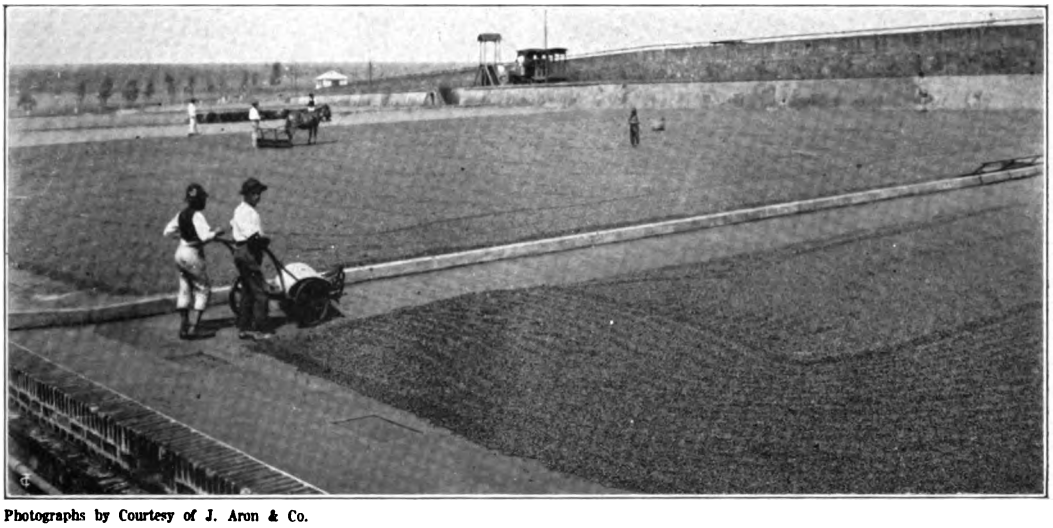
BRAZIL. The operation of some of the large plantations in Brazil, a number of which have more than a million trees, requires a large number and a great variety of preparation machines and equipment. Generally considered, the State of São Paulo is better equipped with approved machinery than any other commercial district in the world.

In Brazil, coffee plantations are known as *fazendas,* and the proprietors as *fazendeiros,* terms that are the equivalent of "landed estates" and "landed proprietors." Practically every *fazenda* in Brazil of any considerable commercial importance is equipped with the most modern of coffee-cleaning equipment. Some of the larger ones in the state of São Paulo, like the Dumont and the Schmidt estates, are provided with private railways connecting the *fazendas* with the main railroad line some miles away, and also have miniature railway systems running through the *fazendas* to move the coffee from one harvesting and cleaning operation to another. The coffee is carried in small cars that are either pushed by a laborer or are drawn by horse or mule.

Some of the larger *fazendas* cover thousands of acres, and have several millions of trees, giving the impression of an unending forest stretching far away into the horizon. Here and there are openings in which buildings appear, the largest group of structures usually consisting of those making up the *cafezale,* or cleaning plant. Nearby, stand the handsome "palaces" of

PICKING COFFEE ON A WELL KEPT FAZENDA

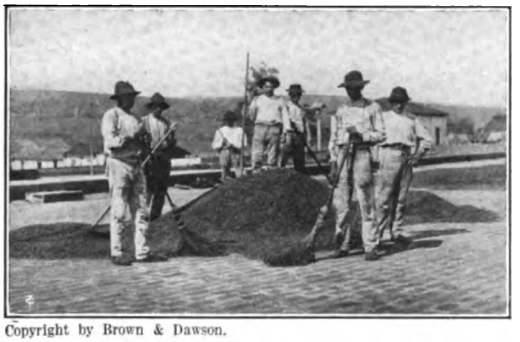
MANAGER'S RESIDENCE ON ONE OF THE BIG SAO PAULO FAZENDAS



Photographs by Courtesy of J. Aron & Co.

DRYING GROUNDS ON A MODERN ESTATE IN RIBEIRAO PRETO

MAKING BRAZIL COFFEE READY TO MARKET



Copyright by Brown & Dawson.

WORKING COFFEE ON DRYING FLATS, SAO PAULO

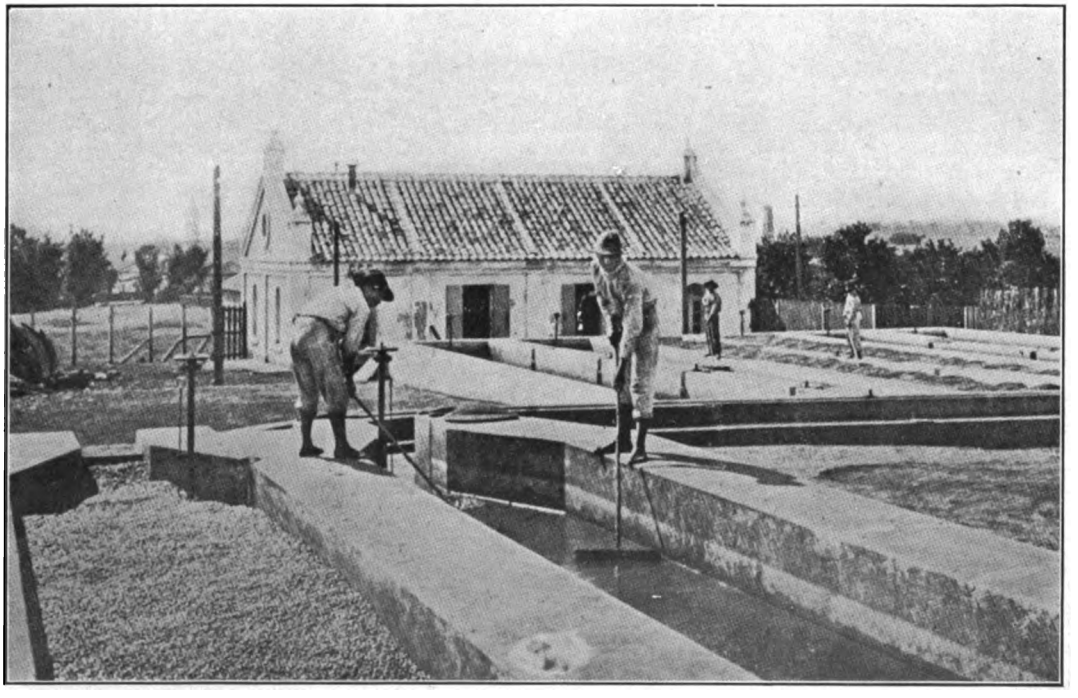
the *fazendeiros;* but not so close that the coffee princes and their households will be disturbed by the almost constant rumble of machinery and the voices of the workers.

Brazilian *fazendeiros* follow the methods described in the foregoing in preparing their coffee for market, using the most modern of the equipment detailed under the story of the wet method of preparation. On most of the *fazendas* the machinery is operated by steam or electricity, the latter coming more and more into use each year in all parts of the coffee-growing region.

In some districts, however, far in the interior, there are still to be found small plantations where primitive methods of cleaning are even now practised. Producing but a small quantity of coffee, possibly for only local use, the cherries may be freed of their parchment by macerating the husks by hand labor in a large mortar. On still another plantation, the old-time bucket-and-beam crusher perhaps may be in use.

This consists of a beam pivoted on an upright upon which it moves freely up and down. On one end of the beam is an open bucket; and on the other, a heavy stone. Water runs into the bucket until its weight causes the stone end of the beam to rise. When the bucket reaches the ground, the water is emptied, and the stone crashes down on the coffee cherries lying in a large mortar.

The workers on some of the largest Brazilian *fazendas* would constitute the population of a small city — more than a thousand families often finding continuous employment in cultivating, harvesting, cleaning, and transporting the coffee to market. For the most part, the workers are of Italian extraction, who have almost altogether superseded the Indian and Negro laborers of the early days. The workers



FERMENTING AND WASHING TANKS ON A SAO PAULO FAZENDA

By Courtesy of J. Aron & Co.

DRYING GROUNDS ON FAZENDA SCHMIDT, THE LARGEST IN BRAZIL

live on the *fazendas* in quarters provided by the *fazendeiros,* and are paid a weekly or monthly wage for their services; or they may enter upon a year's contract to cultivate the trees, receiving extra pay for picking and other work. Brazil in the past has experimented with the slave system, with government colonization, with co-operative planting, with the harvesting system, and with the share system. And some features of all these plans — except slavery, which was abolished in 1888 — are still employed in various parts of the country, although the wage system predominates.

Brazil has six gradings for its São Paulo coffees, which are also classified as Bourbon Santos, Flat Bean Santos, and Mocha-seed Santos. Rio coffees are graded by the number of imperfections for New York, and as washed and unwashed for Havre. (See chapter XXIV.)

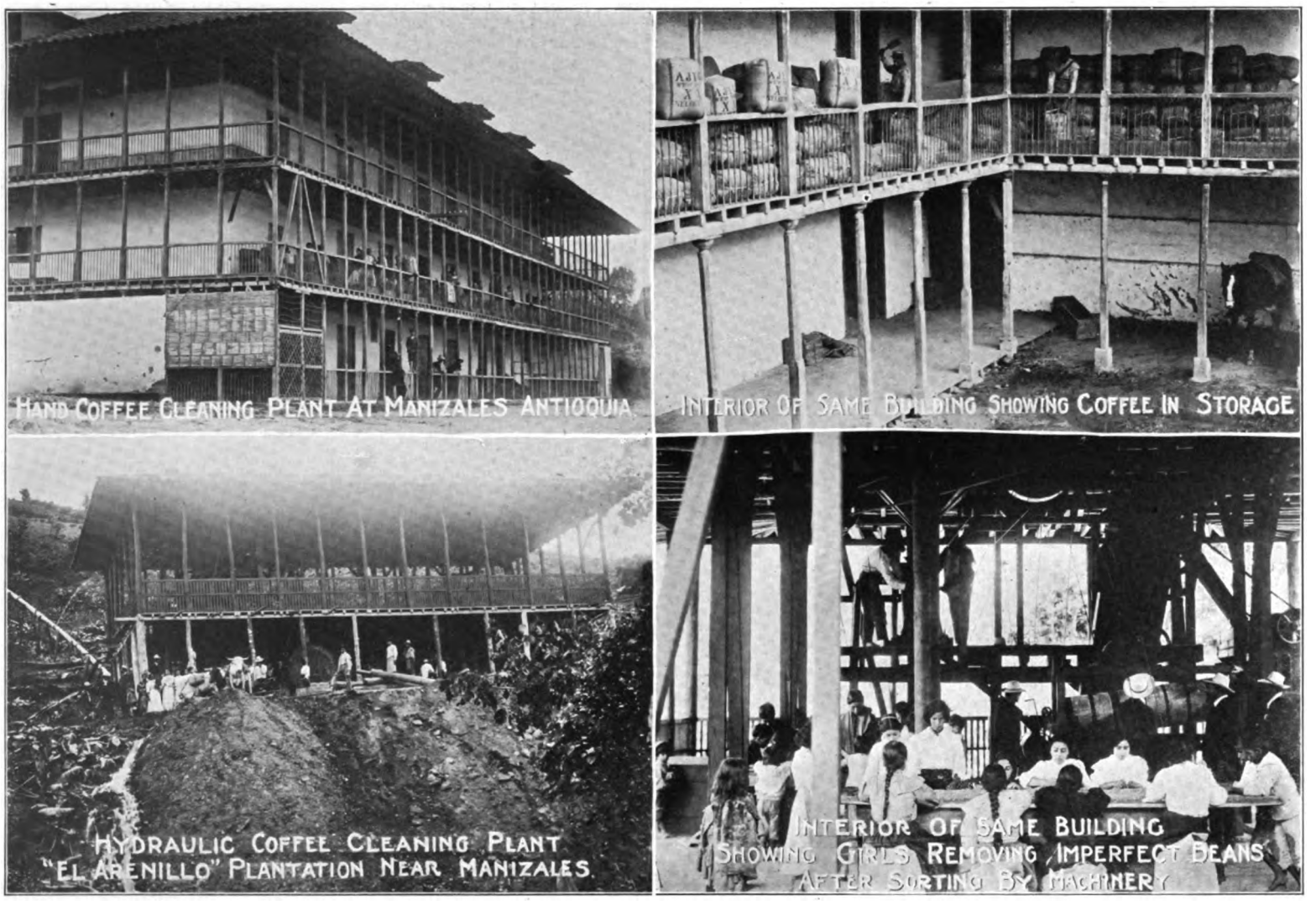
COLOMBIA. Practically all the countries of the western hemisphere producing coffee in large quantities for export trade use the cleaning-and-grading machines specified in the first part of this chapter; and the installation of the equipment is increasing as its advantages become better known

In Colombia, now (1922), next to Brazil the world's largest producer, the wet method of preparing the coffee for market is most generally followed, the drying processes often being a combination of sun and drying machines. Many plantations have their own hulling equipment; but much of the crop goes in the cherry to local commercial centers where there are establishments that make a specialty of cleaning and grading the coffee.

The Colombia coffee crop is gathered twice a year, the principal one in March and April and the smaller one in November and December, although some picking is done throughout the year. For this labor native Indian and negro women are preferred, as they are more rapid, skilful, and careful in handling the trees. Contrary to the method in Brazil, where the tree at one handling is stripped of its entire bearings, ripe and unripe fruit, here only the fully ripened fruit is picked. That necessitates going over the ground several times, as the berries progressively ripen. More time is consumed in this laborious operation, but it is believed that thereby a better crop of more uniform grade is obtained and in the aggregate with less waste of time and effort.

Colombian planters classify their coffees as *café trillado* (natural or sun-dried), *café lavado* (washed), *café en pergamino* (washed and dried in the parchment). They grade them as *excelso* (excellent), *fantasia* (*excelso* and *extra*), *extra* (extra), *primera,* (first), *segundo* (second), *caracol* (peaberry), *monstruo* (large and deformed), *consumo* (defective), and *casilla* (siftings).

VENEZUELA. Venezuela employs both the dry and the wet methods of preparation, producing both "washed" and "commons"


HAND COFFEE CLEANING PLANT AT MANIZALES ANTIOQUIA
INTERIOR OF SAME BUILDING SHOWING COFFEE IN STORAGE
HYDRAULIC COFFEE CLEANING PLANT "EL ARENILLO" PLANTATION NEAR MANIZALES
INTERIOR OF SAME BUILDING SHOWING GIRLS REMOVING IMPERFECT BEANS AFTER SORTING BY MACHINERY

PREPARING COLOMBIAN COFFEE FOR THE MARKET

and also, like Colombia, has a large part of the coffee cleaned in the trading centers of the various coffee districts. Dry, or unwashed, coffees are known as *trillado* (milled), and compose the bulk of the country's output. Venezuela's plantation-working forces are largely natives of Indian descent and negroes, some of them coming during harvesting season from adjoining Colombia and returning there after the picking is done. The resident workers labor under a sort of peonage system which is tacitly recognized by both employee and employer, although no laws of peonage or slavery have ever existed in Venezuela. Under this system, the laborers live in little colonies scattered over the *haciendas*, as the coffee plantations are called in Venezuela. Company stores keep them supplied with all their wants. Modern plantation machinery is very scarce; the ancient method of hulling coffee in a circular trough where the dried berries are crushed by heavy wooden wheels drawn by oxen, is still a common sight in Venezuela. In preparing washed coffees, some planters ferment the pulped coffee under water (wet fermentation process); while others ferment without water (dry fermentation).

The principal ports of shipments for Venezuela coffees are La Guaira, Puerto Cabello, and Maracaibo. Caracas, the capital, is five miles in an air line from the port of La Guaira; but in ascending the three thousand feet of altitude to the city the railroad twists and turns among the mountains for a distance of twenty-four miles. By rail or motor the trip is one of much charm and great beauty.

SALVADOR. The planters in Salvador favor the dry method of coffee preparation; and the bulk of the crop is natural, or unwashed.

GUATEMALA. Most Guatemalas are prepared for market by the wet method. The gathering of the crops furnishes employment for half the population. German and American settlers have introduced the latest improvements in modern plantation machinery into Guatemala.

MEXICO. In Mexico coffee is harvested from November to January, and large quantities are prepared by both the dry and the wet methods, the latter being practised on the larger estates that have the necessary water supply and can afford the machinery. Here, too, one will find coffee being cleaned by the primitive hand-mortar and wind-winnowing method. Laborers are mostly half-breeds and Indians. Chinese coolies have been tried and found

THIS OLD-FASHIONED HULLING MACHINE IS OPERATED BY OX POWER IN VENEZUELA

STREET CAR COFFEE TRANSPORT IN ORIZABA, MEXICO

satisfactory, and some Japanese are utilized, though not largely.

HAITI. In Haiti the picking season is from November to March. In recent years better attention has been paid to cultural and preparation methods; and the product is more favorably regarded commercially. Large quantities are shipped to France and Belgium; and much of that sent to the United States is reshipped to France, Belgium, and Germany, where it is sorted by hand. Both dry and wet methods are employed in Haiti.

PORTO RICO. Here planters favor the wet method of coffee preparation. The crop is gathered from August to December. The coffees are graded as *caracollilo* (peaberry), *primero* (hand-picked), *segundo* (second grade), *trillo* (low grade).

NICARAGUA. The wet method of coffee preparation is mostly favored in Nicaragua. Many of the large plantations are worked by colonies of Americans and Germans who are competent to apply the abundant natural water power of the country to the operation of modern coffee cleaning machinery.

COSTA RICA. Costa Rica was one of the first countries of the western world to use coffee cleaning machinery. Marcus Mason, an American mechanical engineer then managing an iron foundry in Costa Rica, invented three machines that would respectively peel off the husk, remove the parchment and pulp, and winnow the light refuse from the beans.

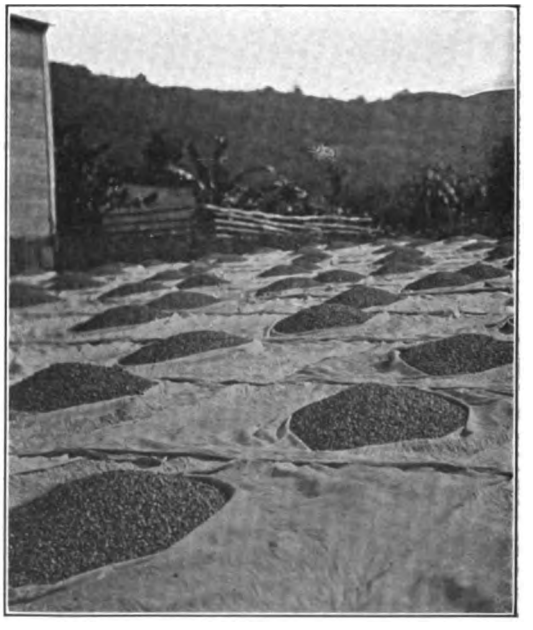
The inventor gave his original demonstration to the planters of San José in 1860, and duplicates were installed on all the large plantations. In the course of the next thirty years, Mason brought out other machines until he had developed a complete line that was largely used on coffee plantations in all parts of the world.

In the Eastern Hemisphere

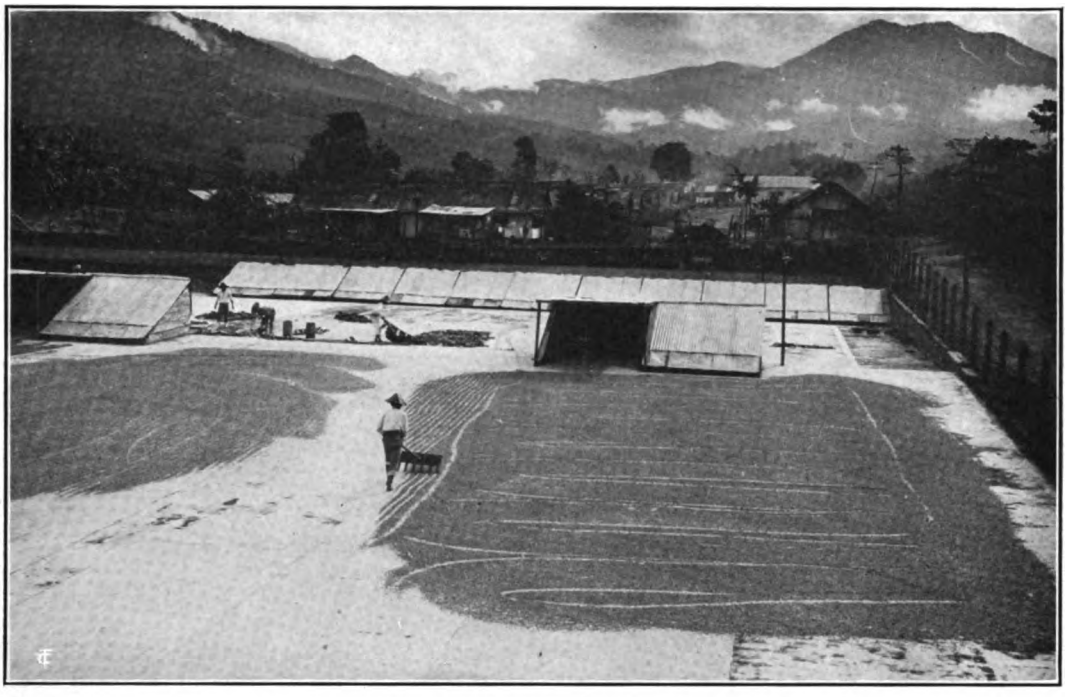
Modern cleaning machinery and methods of preparation are employed to some extent in the large coffee-producing countries of the eastern hemisphere, and do not differ materially from those of the western.

ARABIA. In Arabia the fruit ripens in August or September, and picking continues from then until the last fruits ripen late in the March following. The cherries, as they are picked, are left to dry in the sun on the house-top terrace or on a floor of beaten earth. When they have become partly dry, they are hulled between two small stones, one of which is stationary, while the other is worked by the hand power of two men who rotate it quickly. Further drying of the hulled berry follows. It is then put into bags of closely woven aloe fiber, lined with matting made of palm leaves. It is next sent to the local market at the foot of the mountain. There, on regular market days, the Turkish or Arabian merchants, or their representatives, buy and dispatch their purchases by camel train to Hodeida or Aden. The principal primary market in recent years has been the city of Beit-el-Fakih.

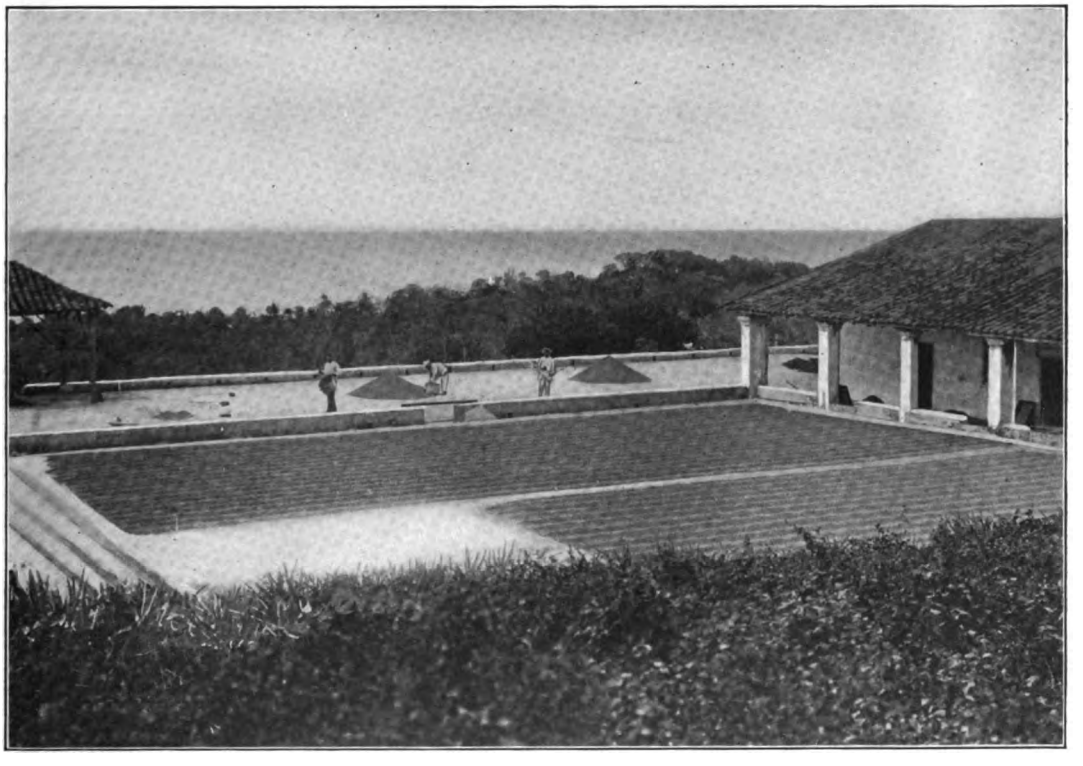
In Aden and Hodeida the bean is submitted to further cleaning by the principal



COFFEE ON THE DRYING FLOORS IN PORTO RICO

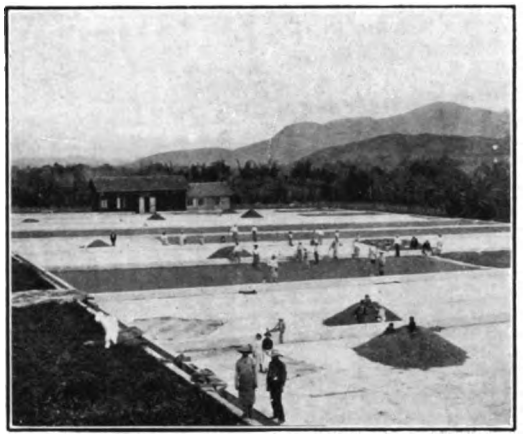


RAKING COFFEE ON DRYING FLOORS — CHUVA DISTRICT, GUATEMALA



COFFEE DRYING PATIOS, HACIENDA LONGA-ESPANA, VENEZUELA

SUN-DRYING COFFEE AMID SCENES OF RARE TROPICAL BEAUTY



A Drying Patio on a Costa Rica Estate

foreign export houses to whom it has come from the mountains in rather dirty condition. Indian women are the sole laborers employed in these cleaning houses. First, the coffee beans are separated from the dry empty husks by tossing the whole into the air from bamboo trays, the workers deftly permitting the husks to fly off while the beans are caught again in the tray. The beans are then surface-cleaned by passing them gently between two very primitive grindstones worked by men. A third process is the complete clearing of the bean from the silver skin, and it is then ready for the final hand picking. Women are called into service again, and they pick out the refuse husks, quaker or black, beans, green or immature beans, white beans, and broken beans, leaving the good beans to be weighed and packed for shipment. The cleaned beans are known as *bun safi;* the husks become *kisher*. Some of the poorer beans also are sold, principally to France and to Egypt. Hand-power machinery is used to a slight extent; but mostly the old-fashioned methods hold sway.

The Yemen, or Arabian, bale, or package, is unique. It is made up of two fiber wrappers, one inside the other. The inside one is called *attal* or *darouf*. It is made from cut and plaited leaves of *nakhel douin* or *narghil,* a species of palm. The outer covering, called *garair,* is a sack made of woven aloe fiber. The Bedouins weave these covers and bring them to the export merchants at Aden and Hodeida. A Mocha bundle contains one, two, or four fiber packages, or bales. When the bundle contains one bale it is known as a half; when it contains two it is known as quarters; and when it contains four it is known as eighths. Arabian coffee for Boston used to be packed in quarters only; for San Francisco and

Photograph by R. C. Wilhelm.

Early Guardiola Steam Drier, "El Canida" Plantation, Costa Rica

INDIAN WOMEN CLEANING MOCHA COFFEE IN AN ADEN WAREHOUSE

There are four processes in cleaning Mocha coffee. In order to separate the dried beans from the broken hulls these women (brought over from India) toss the beans in the air, very deftly permitting the empty hulls to fly off, and catch the coffee beans on the bamboo trays. Then the coffee is passed between two primitive grindstones, turned by men. After this grinding process the beans are separated from the crushed outside hulls and the loose silver skins. In the fourth process the Indian women pick out by hand the remaining husks, the quakers, the immature beans, the white beans and the broken beans. Being Mohammedans, their religion does not permit such little vanities as picture posing, which explains why their faces are covered and turned away from the camera

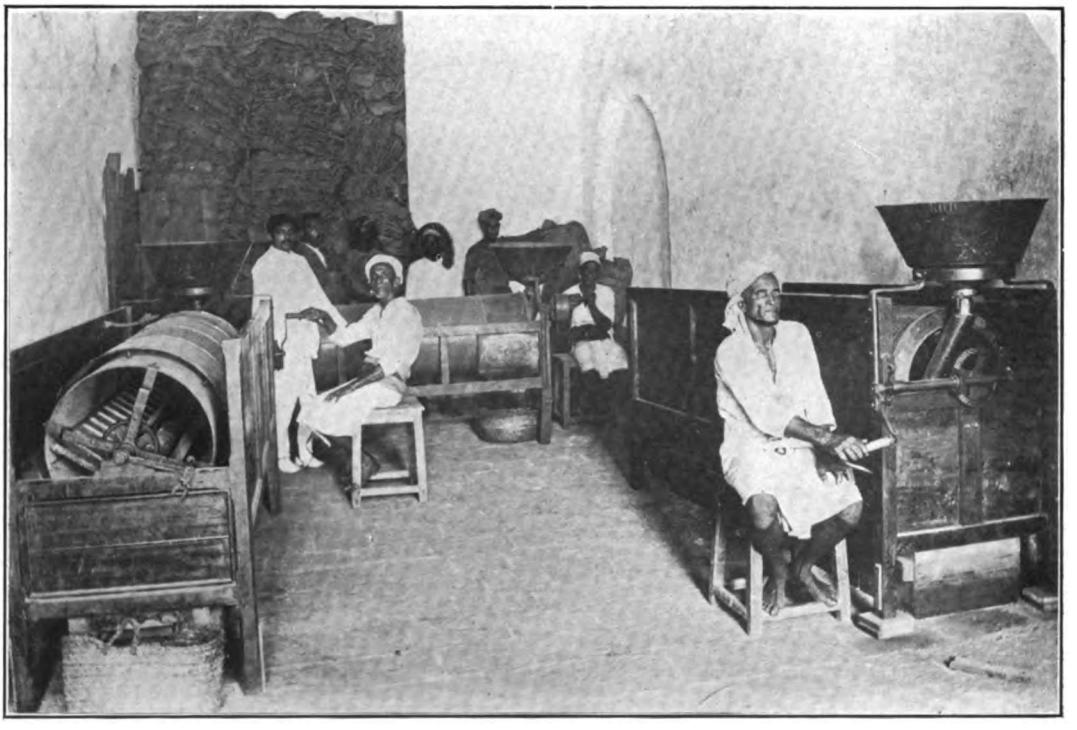
New York, in quarters and eighths. The longberry Abyssinian coffees were formerly packed in quarters only. Since the World War, however, there has been a scarcity of packing materials, and packing in quarters and eighths has stopped. Now, all Mocha, as well as Harar, coffee comes in halfs. A half weighs eighty kilos, or 176 pounds, net — although a few exporters ship "halfs" of 160 pounds.

ABYSSINIA. Little machinery is used in the preparation of coffee in Abyssinia; none, in preparing the coffee known as Abyssinian, which is the product of wild trees; and only in a few instances in cleaning the Harari coffee, the fruit of cultivated trees. Both classes are raised mostly by natives, who adhere to the old-time dry method of cleaning. In Harar, the coffee is sometimes hulled in a wooden mortar; but for the most part it is sent to the brokers in parchment, and cleaned by primitive hand methods after its arrival in the trading centers.

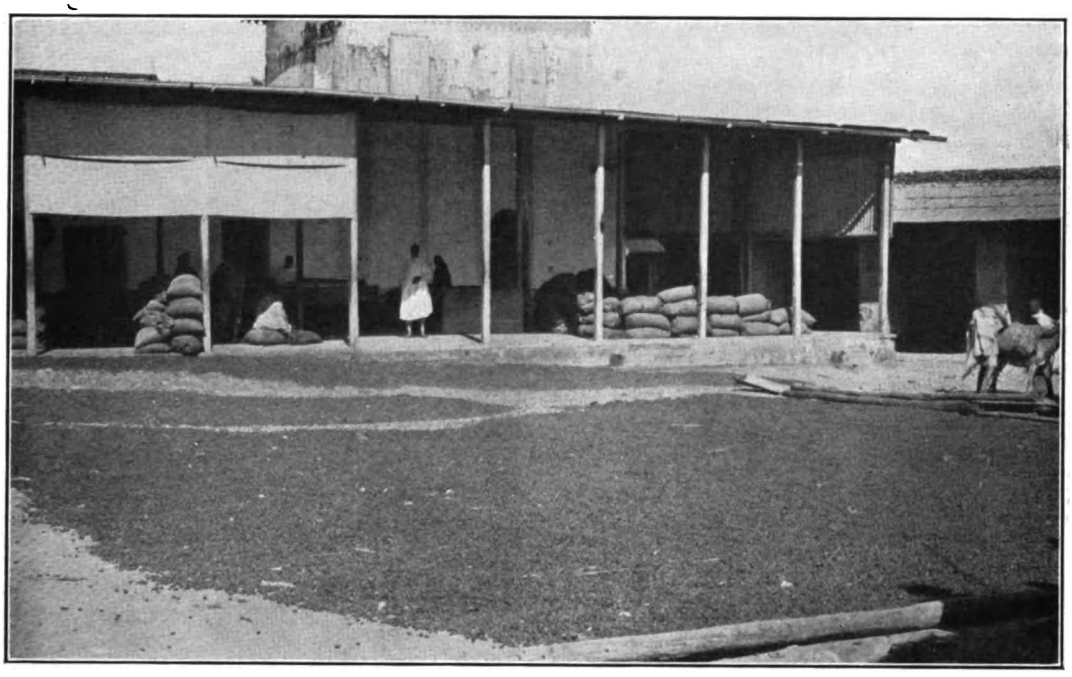
ANGOLA. In Angola the coffee harvest begins in June, and it is often necessary for the government to lend native soldiers to the planters to aid in harvesting, as the labor supply is insufficient. After picking, the beans are dried in the sun from fourteen to forty days, depending upon the weather. After drying, they are brought to the hulling and winnowing machines. There are now about twenty-four of these machines in the Cazengo and Golungo districts, all manufactured in the United States and giving satisfactory results. They are operated by natives.

A condition adversely affecting the trade has been the low price that Angola coffee commands in European markets. The cost of production per *arroba* (thirty-three pounds) on the Cazengo plantations is $1.23, while Lisbon market quotations average $1.50, leaving only twenty-seven cents for railway transport to Loanda and ocean freight to Lisbon. It has been unprofitable to ship to other markets on account of the preferential export duties. A part of the product is now shipped to Hamburg, where it is known as the Cazengo brand. Next to Mocha, the Cazengo coffee is the smallest bean that is to be found in the European markets.

JAVA AND SUMATRA. The coffee industry in Java and Sumatra, as well as in the other coffee-producing regions of the Dutch East Indies, was begun and fostered under the



CLEANING AND GRADING COFFEE BY MACHINERY IN ADEN



DRYING COFFEE IN THE SUN AT THE CUSTOM-HOUSE, HARAR, ABYSSINIA

paternal care of the Dutch government; and for that reason, machine-cleaning has always been a noteworthy factor in the marketing of these coffees. Since the government relinquished its control over the so-called government estates, European operators have maintained the standard of preparation, and have adopted new equipment as it was developed. The majority of estates producing considerable quantities of coffee use the same types of machinery as their competitors in Brazil and other western countries.

In Java, free labor is generally employed; while on the east coast of Sumatra the work is done by contract, the workers usually being bound for three years. In both islands the laborers are mostly Javanese coolies.

Under the contract system, the worker is subject to laws that compel him to work, and prevent him from leaving the estate until the contract period expires. Under the free-labor system, the laborer works as his whims dictate. This forces the estate manager to cater to his workers, and to build up an organization that will hold together.

As an example of the working of the latter system, this outline — by John A. Fowler, United States trade commissioner — of the organization of a leading estate in Java will indicate the general practise in vogue:

The manager of this estate has had full control for twenty years and knows the "adat" (tribal customs) of his people and the individual peculiarities of the leaders. This estate has been described as having one of the most perfect estate organizations in Java. It consists of two divisions of 3,449 bouws (about 6,048 acres in all), of which 2,500 bouws are in rubber and coffee and 550 in sisal; the remainder includes rice fields, timber, nurseries, bamboo, teak, pastures, villages, roads, canals, etc.

The foreign staff is under the supervision of a general manager, and consists of the following personnel: A chief garden assistant of section 1, who has under him four section assistants and a native staff; a chief garden assistant of section 2, who has under him three section assistants, an apprentice assistant, and a native staff; a chief factory assistant, who has under him an assistant machinist, an apprentice assistant, and a native staff; and, finally, a bookkeeper. The term "garden" means the area under cultivation.

The bookkeeper, a man of mixed blood, handles all the general accounting, accumulating the reports sent in by the various assistants. The two chief garden assistants are responsible to the manager for all work outside the factory except the construction of new buildings, which is in charge of the chief factory assistant. The two divisions of the estate are subdivided into seven agricultural sections, each section being in full charge of an assistant. A section may include coffee, rubber, sisal, teak, bamboo, a coagulation station and nurseries. The assistant's

OPEN-AIR DRYING GROUNDS ON A WEST JAVA ESTATE
The beans are being turned by native Sudanese men and women

INTERIOR OF A MODERN COFFEE FACTORY IN EAST JAVA
Showing pulping machinery and fermentation tanks

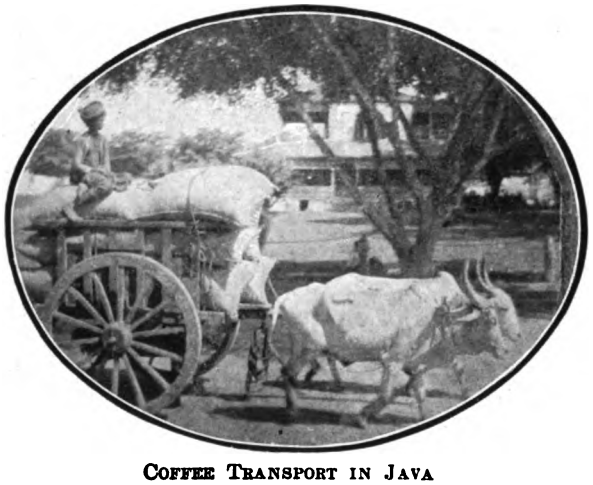
PREPARING JAVA COFFEE FOR THE MARKET

duties include the supervision of road building and repairs, building repairs, transportation, paying the labor, and the supervision of section accounts.

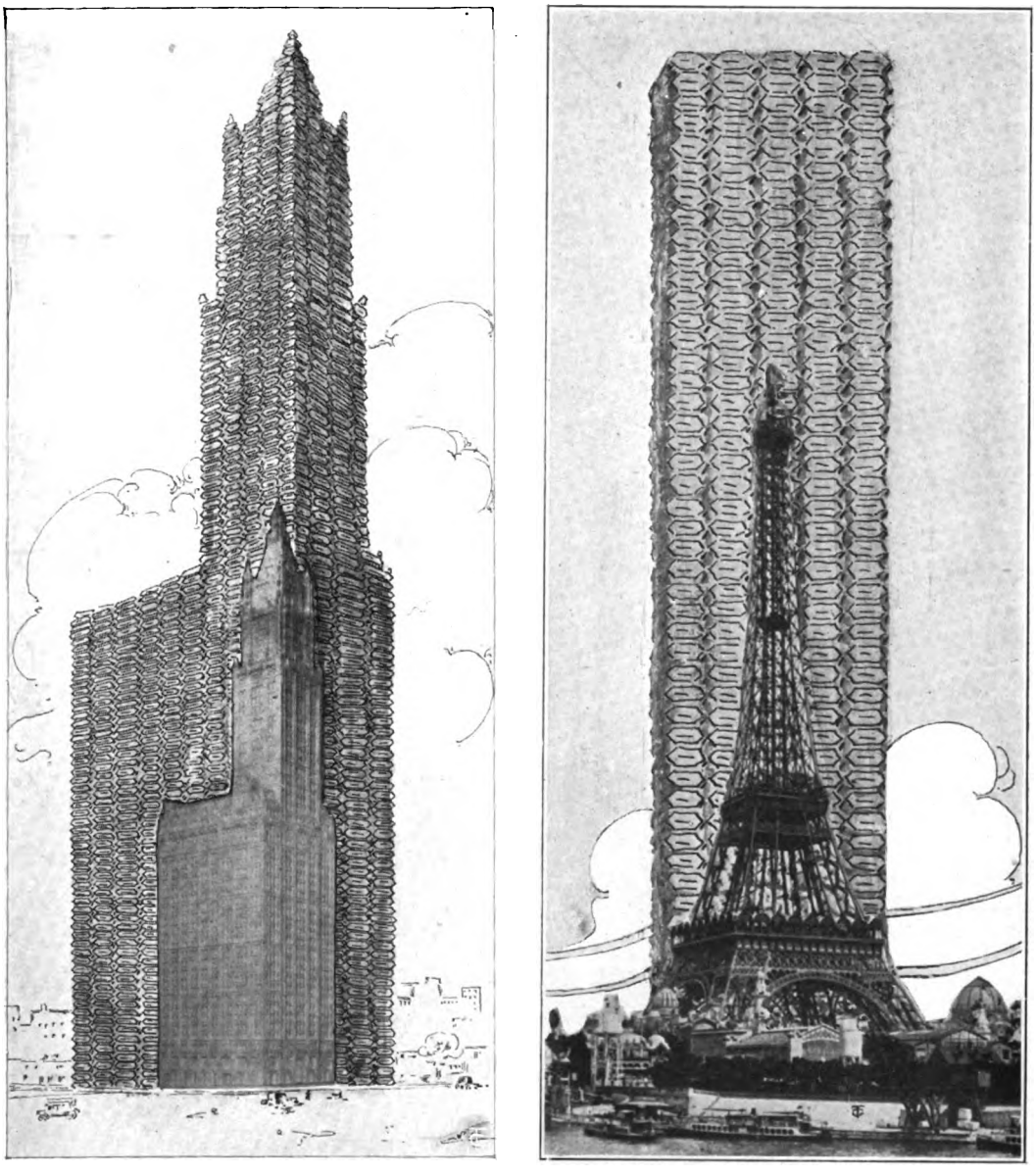
The factory includes a water-power plant delivering, through an American water wheel and by cable, 250 horse-power to the main shafting, an auxiliary steam plant of 150 horse-power as a reserve, a rubber mill, a coffee mill, three sisal-stripping machines, smoke-houses, drying fields and houses for sisal, drying floors and houses for coffee, sorting rooms, blacksmith shop, machine shop, brass-fitting foundry, packing houses, warehouses, and other equipment. The factory is in charge of a first assistant, who is a machinist, with a European staff consisting of a machinist and an apprentice assistant.

The chief garden assistant is paid 350 to 400 florins, and the garden assistants start at 200 florins per month, with graduated yearly increases up to 300 florins per month (florin= $0.40). The chief factory assistant receives 300 florins, and the machinist and bookkeeper 250 florins each.

The mandoer in charge of the air and kiln drying of coffee gets 25 florins per month, and the mandoer at the coffee mill 20 florins. A woman mandoer in charge of the coffee sorters receives 0.50 florin per day and 0.01 florin each for sewing the bags. This woman supervises all the sorters, fixes their status, and inspects their work. Unskilled labor (male) receives 0.40 florin per day in the coffee sheds, and the women sorters are paid 0.50 florin per picul of 136 pounds, measured before sorting. These women are graded into three classes — those who can sort 1 picul in a day, those who can sort three-fourths of a picul, and those who can sort but one-half of a picul in a day. Some of these women become very expert in sorting, and the quality of the output of a factory is largely dependent on an ample supply of expert sorters. Many years are required to develop an adequate personnel for this department.



COFFEE TRANSPORT IN JAVA



THE WORLD'S COFFEE TOWER COMPARED WITH THE EIFFEL AND WOOLWORTH TOWERS

The Woolworth Building, the world's loftiest office structure, is 792 feet high from street to top of tower; its main section of 151 by 196 feet stretches up 386 feet, and its volume equals a total of 13,110,942 cubic feet. But a tower made of the year's supply of bags of green coffee (132 pounds each) would equal 73,649,115 cubic feet, or nearly six times the bulk of the Woolworth Building. In the same proportions it would rise 1,386 feet, with the lower section 260 by 340 feet and 670 feet high. Its dimensions would be nearly double those of the Woolworth Building in every direction. And the Eiffel Tower, reaching up 1,000 feet toward the sky would be lost in a tower made of a year's bags of coffee. Such a tower would stand 1,425 feet high on a base area of 230 feet square, the size of the Eiffel's first floor

CHAPTER XXII

THE PRODUCTION AND CONSUMPTION OF COFFEE

A statistical study of world production of coffee by countries — Per capita figures of the leading consuming countries — Coffee-consumption figures compared with tea-consumption figures in the United States and the United Kingdom — Three centuries of coffee trading — Coffee drinking in the United States, past and present — Reviewing the 1921 trade in the United States

THE world's yearly production of coffee is on the average considerably more than one million tons. If this were all made up into the refreshing drink we get at our breakfast tables, there would be enough to supply every inhabitant of the earth with some sixty cups a year, representing a total of more than ninety billion cups. In terms of pounds the annual world output amounts to about two and a quarter billions — an amount so large that if it were done up in the familiar one-pound paper packages; and if these packages were laid end to end in a row; they would form a line long enough to reach to the moon. If this average yearly production were left in the sacks in which the coffee is shipped, the total of 17,500,000 would be enough to form a broad six-foot pavement reaching entirely across the United States, upon which a man could walk steadily for more than five months at the rate of twenty miles a day. This vast amount of coffee comes very largely from the western hemisphere; and about three-fourths of it, from a single country. The production, shipment, and preparation of this coffee, directly and indirectly support millions of workers; and many countries are entirely dependent on it for their prosperity and economic well-being.

During the crop year that ended June 30, 1921, this million-ton average was considerably exceeded, though it did not approach the record yield of all time in the crop year 1906-07, when the total amounted to almost 24,000,000 sacks; or, in round numbers, 3,000,000,000 pounds.

As indicated by the Statistical Record table, on page 274, Brazil produces more than all the rest of the world put together. Coffee growing, however, is general throughout tropical countries, and in most of them constitutes one of the leading industries. Yet in most cases, the actual production of these countries can only be estimated, as accurate figures, showing the exact output, are seldom kept. But the contribution which each country makes to the total world traffic in coffee can be determined by its export figures, which are obtainable in reasonably accurate and up-to-date form. The table on page 276 gives the coffee export figures, in pounds, for practically every country that produces coffee for sale outside its own borders. Figures are given for the latest available year, and also for the average of the last five years for which statistics are to be obtained. The figures are taken from official statistics, from the publications of the International Institute of Agriculture of Rome, and from other authoritative sources.

For the most part, these figures of exportation are the only ones available to indicate the actual coffee production in

Statistical Record for Thirty-eight Years

Fiscal Year (July 1 to June 30)	Crops: Rio and Santos (Bags)[1]	Crops: Other Countries (Bags)	Crops: Total (Bags)	Deliveries: Europe (Bags)	Deliveries: United States (Bags)	Deliveries: Total (Bags)	Visible Supply July 1. (Bags)	Spot Quotations, Rio No. 7 New York, July 1.
1883-84	5,047,000	4,526,000	9,573,000	6,774,000	2,635,000	9,409,000		
1884-85	6,206,000	4,004,000	10,210,000	7,388,000	3,169,000	10,557,000	5,398,000	8¼
1885-86	5,565,000	3,505,000	9,070,000	7,198,000	2,938,000	10,136,000	5,051,000	7⅛
1886-87	6,078,000	4,106,000	10,184,000	7,363,000	2,672,000	10,035,000	3,985,000	8¼
1887-88	3,033,000	3,214,000	6,247,000	5,888,000	2,164,000	8,052,000	4,134,000	16⅞
1888-89	6,827,000	3,672,000	10,499,000	6,589,000	2,659,000	9,249,000	2,329,000	13½
1889-90	4,260,000	3,965,000	8,225,000	6,716,000	2,704,000	9,420,000	3,579,000	14½
1890-91	5,358,000	2,886,000	8,244,000	6,046,000	2,673,000	8,719,000	2,384,000	17½
1891-92	7,397,000	4,453,000	11,850,000	6,392,000	4,412,000	10,804,000	1,909,000	17⅜
1892-93	6,203,000	4,887,000	11,090,000	6,457,000	4,389,000	10,945,000	2,955,000	17⅛
1893-94	4,309,000	5,307,000	9,616,000	6,272,000	4,298,000	10,570,000	3,100,000	16⅝
1894-95	6,695,000	5,069,000	11,764,000	6,816,000	4,396,000	11,212,000	2,146,000	16½
1895-96	5,476,000	4,901,000	10,377,000	6,803,000	4,339,000	11,142,000	3,115,000	15¾
1896-97	8,680,000	5,238,000	13,918,000	7,155,000	5,080,000	12,244,000	2,588,000	13
1897-98	10,462,000	5,596,000	16,058,000	8,535,000	6,036,000	14,571,000	3,975,000	7⅜
1898-99	8,771,000	4,985,000	13,756,000	7,798,000	5,682,000	13,480,000	5,435,000	6¼
1899-00	8,959,000	4,842,000	13,801,000	8,937,000	6,035,000	14,972,000	6,200,000	6⅛
1900-01	10,927,000	4,173,000	15,100,000	8,486,000	5,843,000	14,329,000	5,840,000	8 1/16
1901-02	15,439,000	4,296,000	19,735,000	8,853,000	6,663,000	15,516,000	6,867,000	6
1902-03	12,324,000	4,340,000	16,664,000	9,118,000	6,847,000	15,966,000	11,261,000	5¼
1903-04	10,408,000	5,575,000	15,983,000	9,280,000	6,853,000	16,133,000	11,900,000	5 3/16
1904-05	9,968,000	4,480,000	14,448,000	9,475,000	6,687,000	16,163,000	12,361,000	7⅛
1905-06	10,227,000	4,565,000	14,792,000	9,934,000	6,806,000	16,741,000	11,265,000	7¾
1906-07	19,654,000	4,160,000	23,814,000	10,502,000	7,042,000	17,544,000	9,636,000	7 11/16
1907-08	10,283,000	4,551,000	14,834,000	10,481,000	7,043,000	17,525,000	16,400,000	6⅜
1908-09	12,419,000	4,499,000	16,918,000	11,129,000	7,519,000	18,649,000	14,126,000	6¼
1909-10	14,944,000	4,181,000	19,125,000	10,811,000	7,287,000	18,098,000	12,841,000	7¾
1910-11	10,548,000	3,976,000	14,524,000	10,492,000	7,015,000	17,507,000	13,719,000	8⅜
1911-12	12,491,000	4,918,000	17,409,000	10,712,000	6,762,000	17,474,000	11,070,000	13⅛
1912-13	11,458,000	4,915,000	16,373,000	10,144,000	6,675,000	16,820,000	11,048,000	14¾
1913-14	13,816,000	5,796,000	19,612,000	11,027,000	7,545,000	18,573,000	10,285,000	9⅝
1914-15	12,867,000	5,019,000	17,886,000	13,368,000	8,010,000	21,378,000	11,302,000	8¾
1915-16	14,992,000	4,764,000	19,756,000	11,050,000	8,834,000	19,884,000	7,523,000	7½
1916-17	12,112,000	4,579,000	16,691,000	5,171,000	9,046,000	14,217,000	7,328,000	9⅛
1917-18	15,127,000	3,720,000	18,847,000	6,209,000	8,624,000	14,833,000	7,793,000	9½
1918-19	9,140,000	4,500,000	13,640,000	6,073,000	8,994,000	15,067,000	8,783,000	8½
1919-20	6,700,000	8,463,000	15,163,000	7,047,000	9,683,000	16,730,000	7,173,000	22¼
1920-21	13,816,000	6,467,000	20,283,000	6,397,000	9,701,000	16,099,000	6,909,000	13¼

[1]. 1 Bag = 132.27 lbs.

THE WORLD'S COFFEE CUP AND THE WORLD'S LARGEST SHIP

The statistical sharks talk of the 17,566,000 bags, or 2,318,712,000 pounds of coffee that the world drinks every year; but how many really appreciate what those huge figures mean? For instance, computing 40 cups of beverage to the pound, there are more than 90,000,000,000 cups drunk annually, or enough to fill a gigantic cup 4,000 feet in diameter and 40 feet deep, on which the "Majestic," the world's largest ship, would appear floating approximately as shown in the drawing

the countries named. The following additional data, however, will serve to show the extent to which the coffee-raising industry has developed in most of these countries, and in a few places of minor importance not named in the table:

BRAZIL. The coffee industry of Brazil, which has furnished seventy percent of the world's coffee during the last ten years, has developed in a century and a half. Brazilian soil first made the acquaintance of the coffee plant at Pará in 1723. A small export trade to Europe had developed by 1770, the year when the first plantation was established in the state of Rio de Janeiro, and from which the country's great industry really dates. Development at first was apparently slow, as no exports are recorded until the beginning of the nineteenth century; so that the history of Brazil's coffee trade is a matter entirely of the nineteenth and twentieth centuries. Once started, however, the new line of export made rapid progress. In 1800, the amount of coffee exported was 1720 pounds, contained in thirteen bags. Twenty years later, 12,896,000 pounds were shipped, the number of bags being 97,498. Ten years later, in 1830, this amount had increased to 64,051,000 pounds; and in 1840, to 137,300,000 pounds. In 1852 - 53, the receipts for shipment at the ports were double that amount, 284,592,000 pounds; in 1860 - 61 they were 420,420,000 pounds; in 1870 - 71 they had increased to 427,416,000 pounds; in 1880 - 81 they were 764,945,000 pounds; in 1890 - 91, 739,654,000 pounds; and at the beginning of this century, 1900 - 01, they were 1,504,424,000 pounds, having passed the one billion-pound mark in 1896 - 97. The highest point of coffee receipts in the country's history was reached in 1906-07 with 2,699,644,694 pounds; and since that year, the amount has staid at about one and one-half

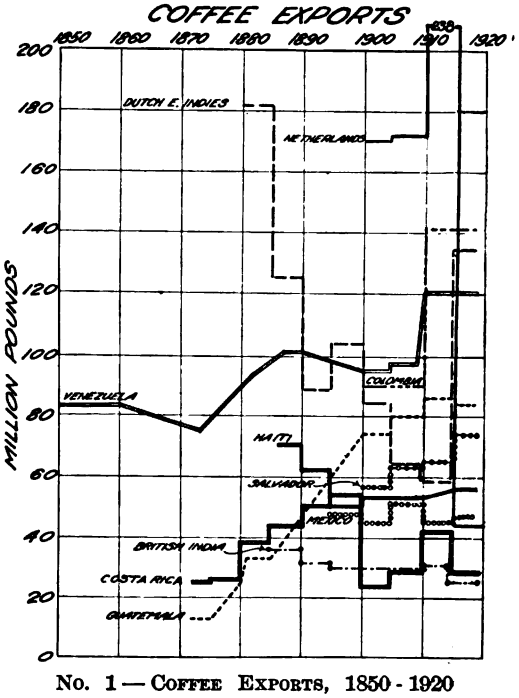
EXPORTS OF COFFEE FROM THE COFFEE-PRODUCING COUNTRIES OF THE WORLD

Country	*Year*	*Pounds*	*Five-Year Average Pounds*
South America:			
Brazil	1920	1,524,382,650	1,469,949,180
Colombia	1920	190,961,953[c]	172,862,121
Venezuela	1920	73,726,632	110,174,946
Guiana, Br.	1917	267,344	257,152
Guiana, Fr.	1918	1,100	970
Guiana, D.	1918	3,856	923,644[d]
Ecuador	1919	3,729,413	5,843,033
Peru	1919	370,655	455,212
Central America:			
Salvador	1920	82,864,668	78,953,339
Nicaragua	1920	15,345,398	23,243,865
Costa Rica	1921[a]	29,401,683	28,667,262
Guatemala	1920	94,205,569	88,213,080
Honduras	1920[b]	1,091,977	646,574
Mexico	1918	30,172,065	47,555,514[d]
West Indies:			
Haiti	1920[b]	61,970,094[e]	54,308,959[d]
Dominican Republic	1920	1,361,666	3,497,866
Jamaica	1919	8,246,672	7,918,781
Porto Rico	1921	29,967,879[f]	30,033,471[df]
Trinidad & Tobago	1920	73,201	19,639
Martinique	1918	10,358	17,219
Guadeloupe	1918	2,144,855	1,594,146
Dutch East Indies	1920	99,020,453[i]	103,701,297[h]
Pacific Islands:			
Br. North Borneo	1918	1,984	6,613
New Caledonia	1916	1,248,024	784,176
New Hebrides	1917	625,224	608,410[g]
Hawaii	1921	4,979,121[f]	4,244,479[df]
Réunion	1918	3,527	26,455
Asia:			
Aden (Arabia)	1921[b]	9,463,104	10,837,893
Br. India	1920[b]	30,526,832	23,767,744
French Indo-China	1918	79,145	516,978
Africa:			
Eritrea	1918	728,840	315,698
Somaliland, Fr.	1917	11,222,736	9,321,930
Somaliland, Br.	1918	440,272	233,908
Somaliland, It.	1918	3,747	3,306
Abyssinia	1917	17,324,223	12,744,406
German East Africa (former)	1913	2,334,450	2,649,047[d]
Br. East African Protectorate	1918	18,735,572	8,397,541
Uganda	1918	9,999,845	5,076,091
Nyasaland	1918	122,796	92,593
Mayotte (including Comoro Is.)	1914	3,306	660
Madagascar	1918	707,676	981,047
Angola	1913	10,655,934	10,459,724
Belgian Congo	1919	347,588	186,432[h]
Fr. Equatorial Africa	1916	48,060	47,046
Nigeria	1916	3,527	19,180
Ivory Coast	1918	66,358	49,162
Gold Coast	1917	660	220
French Guinea	1918	1,320	1,320
Spanish Guinea	1918	8,150	3,968[h]
St. Thomas & Prince's Is.	1916	484,350	1,125,448
Liberia	1917	761,300	
Cape Verde Islands	1916	1,442,910	1,100,095

a Crop year. b Fiscal year. c Including small proportion of unhusked coffee. d Four-year average. e Not including 6,322,167 pounds "triage" or waste coffee. f Including shipments to continental United States. g Two-year average. h Three-year average. i Java and Madura only

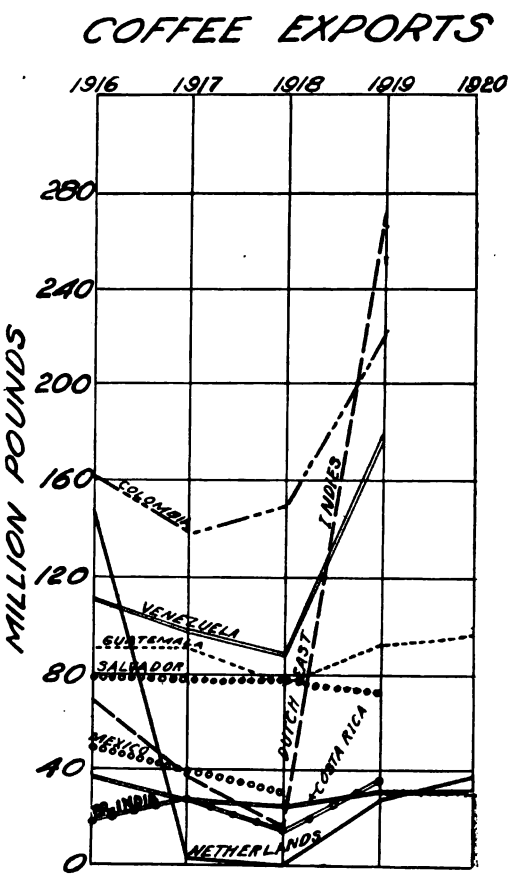
billion pounds. Further expansion in the last fifteen years has been closely regulated to prevent over-production.

It is estimated that the area in the coffee-growing section suitable for coffee raising covers 1,158,000 square miles, or more than one-third the area of continental United States. The state of São Paulo is the chief producing state, and supplies practically half the world's annual output. Most of this São Paulo coffee is exported through the port of Santos, which is consequently the leading coffee port of the world. Besides Santos, the ports of Rio de Janeiro and Victoria are of much importance in the coffee trade, although some twenty or thirty million pounds are exported each year through the port of Bahia, and smaller amounts through various other ports. The crop year of Brazil runs from July 1 to June 30, the heaviest receipts for shipment coming as a rule in the months of August, September, and October of each year. One-third of the season's crop is usually received at ports of shipment before the last of October, sometimes as early as the latter part of September; one-half comes in by the middle or last of November; and two-thirds is usually received by the end of January.



No. 1 — Coffee Exports, 1850 - 1920

This diagram shows the exports of the principal coffee-producing countries, omitting Brazil



No. 21 — 1 Coffee Exports, 1916 - 1920

This diagram shows the exports of the leading coffee countries (except Brazil) in a period covering most of the World War

Venezuela. The coffee plant was introduced into Venezuela in 1784, being brought from Martinique; and the first shipment abroad, consisting of 233 bags, was made five years later. By 1830 - 31, production had increased to 25,454,000 pounds; and in the next twenty years, it more than trebled, amounting to 83,717,000 pounds in 1850 - 51. Since then, however, the increase has been much more gradual. In 1881 - 82, 94,369,000 pounds were produced; and about the same amount, 95,170,000 pounds, in 1889 - 90. Twentieth-century production has apparently exceeded the hundred-million mark on the average, although there are no definite statistics beyond export figures. These showed 86,950,000 pounds sent abroad in 1904 - 05; 103,453,000 pounds in

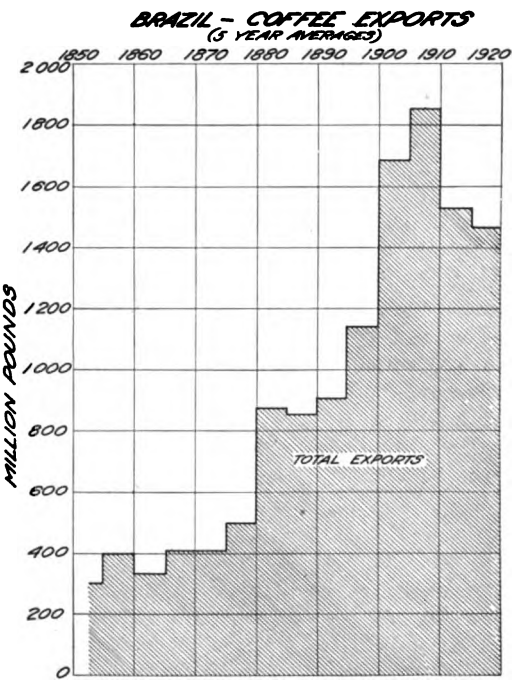
1908 - 09; and 88,155,000 pounds in 1918; the trade in the last-named year being cut down by war conditions. In 1919, the extraordinary amount of 179,414,815 pounds was exported, the high figure being due to the release of coffee stored from previous years. It has been estimated that domestic consumption of coffee would amount to a maximum of 25,000,000 pounds yearly, but may be much less than that. The United States and France have in the past been Venezuela's best customers.

COLOMBIA. Prior to 1912, the total production of coffee in Colombia was around 80,000,000 pounds annually, of which some 3,000,000 or 4,000,000 pounds were consumed in the country itself. But in the last decade production has been advancing rapidly, and the present production is the heaviest in the history of the country. The industry has practically grown up in the last seventy years, the exports for the decade 1852 - 53 to 1861 - 62 averaging only about 940,000 pounds; in the decade following, about 5,700,000 pounds; and, in the ten years from 1872 - 73 to 1881 - 82, about 12,600,000 pounds, according to an unofficial compilation. Exportations had advanced to about 47,000,000 pounds by 1895; and to 80,000,000 pounds by 1906. As large quantities of Colombian coffee are shipped out through Venezuela, and because of the lack of detailed statistics in Colombia, the actual exportation each year is not easy to determine; but the following figures, obtained by a trade commissioner of the United States, may be taken as a fairly accurate estimate of exports from 1906 to 1918:

COLUMBIAN COFFEE EXPORTS

Year	*Sacks (138 lbs.)*
1906	605,705
1907	541,300
1908	577,900
1909	673,350
1910	543,000
1911	601,600
1912	888,800
1913	972,000
1914	983,000
1915	1,074,600
1916	1,153,000
1917	1,093,000
1918	1,102,000

ECUADOR. Annual production in Ecuador runs from 3,000,000 to 8,000,000 pounds, most of which is exported. The



No. 3 — BRAZIL'S COFFEE EXPORTS, 1850-1920
Diagram based on 5-year averages with quantities given in millions of pounds

greater part of the production is sent to Chile and the United States. Production has shown only a gradual increase since the middle of the nineteenth century, when planters began to give some attention to coffee cultivation. Exports were about 87,000 pounds in 1855; 296,000 pounds in 1870; and 985,000 pounds in 1877. By the beginning of the present century, production had reached 6,204,000 pounds; in 1905, it was estimated at 4,861,000 pounds; and in 1910, at 8,682,000 pounds. Exports in 1912 were 6,101,700 pounds; and 7,671,000 pounds in 1918; but there was a falling off to 3,729,000 pounds in 1919. Several years ago it was estimated that the coffee trees numbered 8,000,000, planted on 32,000 acres.

PERU. Coffee is one of the minor products of Peru, and the country does not occupy a place of importance in the international coffee trade. The larger part of the production is apparently consumed in the country itself. Export figures indicate that the industry is steadily declining. Exports amounted to 2,267,000 pounds in 1905; to 1,618,000 pounds in 1908; and in the five years ending with 1918, exports averaged only 529,000 pounds; while fig-

ures for 1919 show that in that year they fell still lower, to 370,000 pounds. Production is mainly in the coast lands.

BRITISH GUIANA. The Guianas are the site of the first coffee planting on the continent of South America; and according to some accounts, the first in the New World. The plants were brought first into Dutch Guiana, but there was no planting in what is now British Guiana (then a Dutch colony) until 1752. Twenty-six years later, 6,041,000 pounds were sent to Amsterdam from the two ports of Demarara and Berbice; and after the colony fell into the hands of the English in 1796, cultivation continued to increase. Exports amounted to 10,845,000 pounds in 1803; and to more than 22,000,000 pounds in 1810. Then there was a falling off, and the production in 1828 was 8,893,500 pounds and 3,308,000 pounds in 1836. In 1849 British Guiana exported only 109,600 pounds. For a long period thereafter there was little production, and practically no exportation; exports in 1907, for instance, amounting to only 160 pounds. With the next year, however, a revival of exportation began, and it has continued to grow since then. In 1908, exports were 88,700 pounds; and for the succeeding years, up to 1917, the following amounts are recorded: 1909, 96,952 pounds; 1910, 108,378 pounds; 1911, 136,420 pounds; 1912, 144,845 pounds; 1913 , 89,376 pounds; 1914, 238,767 pounds; 1915, 172,326 pounds; 1916, 501,183 pounds; 1917, 267,344 pounds. In the last-named year 4,953 acres were in coffee plantations.

FRENCH GUIANA. This colony raises a small amount of coffee for local consumption, and exports a few hundred pounds; but it is really an importing and not an exporting colony. Coffee cultivation was never of much importance, although in 1775 some 72,000 pounds were exported. One hundred and eighty thousand pounds were harvested in 1860; and 132,000 pounds in 1870, mostly for local con-consumption.

DUTCH GUIANA. Regular shipments of coffee from Dutch Guiana have been made for two centuries, beginning — a few years after the plant was introduced — with a shipment of 6,461 pounds to the mother country in 1723. Seven years later, 472,000 pounds were shipped; and in 1732-33 exportation reached 1,232,000 pounds. Exports were averaging 16,900,000 pounds a year by 1760; and reached almost 20,600,000 pounds in 1777. At the beginning of the nineteenth century, they amounted to about 17,000,000 pounds; but a few years later fell off to some 7,000,000 pounds, where they remained until about 1840; after which they began again to decline. Exportation had practically ceased by 1875, only 1,420 pounds going out of the country, although cultivation still continued, as evidenced by a production of 82,357 pounds in that year. In 1890, production was only 15,736 pounds, and exports only 476 pounds; but since then there has been a considerable increase. In 1900, production amounted to 433,000 pounds, and exports to 424,000 pounds. In 1908, 1,108,000 pounds were grown, of which 310,000 pounds were sent abroad; and in 1909, the figures were 552,000 pounds produced and 405,000 pounds exported. No figures are available for production in recent years; but the exportation of 1,600,000 pounds in 1917 indicates that plantings have been steadily growing.

OTHER SOUTH AMERICAN COUNTRIES. Of the other South American countries, Argentina, Chile, and Uruguay are coffee-importing countries; . and the coffee-raising industry of Paraguay, although more or less promising, has yet to be developed. In Argentina, a few hundred acres in the subtropical provinces of the north have been planted to coffee; but coffee-growing will always necessarily remain a very minor industry. Many attempts have been made to establish the industry in Paraguay, where favorable conditions obtain, but only a few planters have met with success. Their product has all been consumed locally. Bolivia has much land suitable for coffee raising; and it is estimated that production has reached as high as 1,500,000 pounds a year, but transportation conditions are such as to hold back development for an indefinite time. Small amounts are now exported to Chile.

SALVADOR. Coffee was introduced into Salvador in 1852, and immediately began to spread over the country. Exports were valued at more than $100,000 in 1865; and by 1874-75 the amount exported had reached 8,500,000 pounds. The first large plantation was established in 1876; and since then planting has continued, until now practically all the available coffee

land has been taken up. The area in plantations has been estimated at 166,000 acres, and the annual production at 50,000,000 to 75,000,000 pounds, of which some 5,000,000 pounds are consumed in the country. Since the beginning of the present century, exports have in general shown a considerable increase, the figures for 1901 being 50,101,000 pounds; for 1905, 64,480,000 pounds; for 1910, 62,764,000 pounds; for 1915, 67,130,000 pounds; and for 1920, 82,864,000 pounds.

GUATEMALA. Cultivation of coffee in Guatamala became of importance between 1860 and 1870. In 1860, exports were only about 140,000 pounds; by 1863, they had increased to about 1,800,000 pounds; and by 1870, to 7,590,000 pounds. In 1880 - 81, they amounted to 28,976,000 pounds; and in 1883 - 84, to 40,406,000 pounds. Twenty years later, they had doubled. In recent years, exports have ranged between 75,000,000 and 100,000,000 pounds; the years from 1909 to 1918 showing the following results, according to a consular report:

GUATEMALA'S COFFEE EXPORTS

Year	*Cleaned* (pounds)	*Unshelled* (pounds)
1909	92,630,800	23,654,600
1910	50,717,600	19,671,700
1911	60,689,500	20,959,500
1912	14,329,800	60,837,500
1913	70,749,100	20,980,700
1914	71,136,800	14,999,600
1915	69,649,500	9,892,000
1916	85,057,000	3,015,800
1917	89,259,600	1,410,200
1918	77,842,800	511,500

COSTA RICA. Coffee raising in Costa Rica dates from 1779, when the plant was introduced from Cuba. By 1845, the industry had grown sufficiently to permit an exportation of 7,823,000 pounds; and twenty years later, 11,143,000 pounds were shipped. Thereafter, production increased rapidly; so that in 1874, the total exports were 32,670,000 pounds, and in 1884 they were more than 36,000,000 pounds. In recent years, the average production has been around 35,000,000 pounds. For the crop years 1916 - 17 to 1920 - 21 exports have been:

COSTA RICA'S COFFEE EXPORTS

Year	*Pounds*
1916 - 17	27,044,550
1917 - 18	25,246,715
1918 - 19	30,784,184
1919 - 20	30,860,634
1920 - 21	29,401,683

NICARAGUA. Production of coffee in Nicaragua began between 1860 and 1870; and in 1875, the yield was estimated at 1,650,000 pounds. By 1879 - 80, this had increased to 3,579,000 pounds; and by 1889 - 90, to 8,533,000 pounds. In 1890 - 91 production was 11,540,000 pounds; and in 1907 - 08 it was estimated at more than 20,000,000 pounds. Ten years later, 25,000,000 pounds were produced; and the crop of 1918 - 19 was estimated at about 30,000,000 pounds. Lack of transportation, and excess of political troubles, have been important factors in holding back development.

HONDURAS. The coffee of Honduras is of very good quality; but production is small, and the country is not an important factor in international trade. Exports usually run less than 1,000,000 pounds. The chief obstacle to expansion is said to be lack of transportation facilities.

BRITISH HONDURAS. This colony grows a little coffee for its own use, but imports most of what it needs. Production had reached almost 50,000 pounds in 1904; but the present average is only about 10,000 pounds, raised on scattering trees over about 1,000 acres.

PANAMA. A small amount of coffee, of which occasionally as much as 200,000 or 250,000 pounds a year are exported, is raised in the uplands of Panama, or is gathered from wild trees. The industry is not of great importance, and the country imports considerable supplies, mostly from the United States.

MEXICO. A very good grade of coffee is produced in Mexico; and it is said that there is sufficient area of good coffee land to take care of the demand of the world outside of that supplied by Brazil. Production, however, is limited, and to a large extent goes to satisfy home needs, leaving only about 50,000,000 pounds for export. In spite of much government encouragement in past years, coffee cultivation has not made rapid progress, when we remember that the country became acquainted with the plant as early as 1790. Not until about 1870 did the country begin to become important in the list of coffee-exporters; but by 1878 - 79, shipments amounted to about 12,000,000 pounds. This steadily increased to 29,400,000 pounds in 1891 - 92. Exports in recent years have averaged about 50,000,000 pounds; but in 1918 were only

30,000,000. Production has fluctuated greatly. In the years preceding the troubled revolutionary period, the total output was estimated as follows: 1907, 45,000,000 pounds; 1908, 42,000,000 pounds; 1909, 81,000,000 pounds; 1910, 70,000,000 pounds. In the ten years preceding 1907, production dropped as low as 22,000,000 pounds in 1902; and rose to 88,500,000 pounds in 1905. Next to the United States, Germany was the chief buyer of Mexican coffee before the war; although France and Great Britain also took several million pounds each.

HAITI. For well over a century Haiti has been shipping tens of millions of pounds of coffee annually; and the product is the mainstay of the country's economic life. In all that time, however, shipments have maintained much the same level. The country has been a coffee producer from the early years of the eighteenth century, when the plants began to spread from the original sprigs in Guiana or Martinique. After half a century of growth, exports had risen to 88,360,000 pounds in 1789 - 90, a mark that has never again been reached. Since then, exports have ranged between 40,000,000 and 80,000,000 pounds, keeping close to the lower mark in recent years because of European conditions. They were 38,000,000 pounds in 1856; 55,750,000 pounds in 1866; and 52,300,000 pounds in 1876. They had reached 84,028,000 pounds in 1887 - 88; but fell back to 67,437,000 pounds in 1897 - 98; and ten years later, were 63,848,000 pounds. In 1917 - 18, they were only about two-thirds that amount, or 42,100,000 pounds. Some 8,000,000 pounds are consumed yearly in the country itself. The coffee plantations cover about 125,000 acres.

DOMINICAN REPUBLIC. Coffee production in the Dominican Republic ranges between 1,000,000 and 5,000,000 pounds, exports in recent years averaging about 3,500,000 pounds. The quality of the coffee is good; but the plantations are not well cared for. Until fifty years ago, the industry was in a state of decline from a condition of former importance; but it was revived, and by 1881 it supplied 1,400,000 pounds for export. The amount was 1,480,000 pounds in 1888; 3,950,000 pounds in 1900; 1,540,000 pounds in 1909; and 4,870,000 pounds in 1919. Blight, and disturbed political conditions, have hampered development. In normal times, Europe takes most of the export.

JAMAICA. Jamaica began to raise coffee about 1730; and from that time on there was a steady but slow increase in production. Shipments amounted to about 60,000 pounds in 1752, and to about 1,800,000 pounds in 1775. At the beginning of the new century, in 1804, exports of 22,000,000 pounds are recorded; and in 1814 the figure was 34,045,000 pounds. Then exports gradually fell off, and in 1861 were only 6,700,000 pounds. They were 10,350,000 pounds in 1874; and since then, have not varied much from 9,000,000 or 10,000,000 pounds a year. They were 9,363,000 pounds in 1900; 7,885,000 pounds in 1909; and 8,246,000 pounds in 1919. The acreage in coffee remains fairly constant, being 24,865 in 1900; 22,275 in 1911; and 20,280 in 1917. It is said that there are 80,000 acres of good coffee land still uncultivated.

PORTO RICO. The cultivation of coffee in Porto Rico dates back to the middle of the eighteenth century; but exportation does not seem to have been much more than a million pounds a year until the first years of the nineteenth century. Between 1837 and 1840, the average exportation was about 10,000,000 pounds; and by 1865, this had risen to 24,000,000 pounds. Ten years later, it was 25,700,000 pounds. In recent years, it has averaged about 37,000,000 pounds; the 1921 figure, including shipments to continental United States, being 29,968,000 pounds. Production since 1881 has been between 30,000,000 and 50,000,000 pounds; the heaviest being in 1896 when the total output was 62,628,337 pounds — the largest figure in the island's history. The industry was greatly damaged by a disastrous storm in 1900, and was also adversely affected by the European War, as a large part of Porto Rico's crop goes to Europe. Porto Rican coffee has not been popular in the United States, which takes only limited amounts. Cuba is one of the island's best customers.

GUADELOUPE. Coffee production in Guadeloupe reached its highest point in the latter part of the eighteenth century, when more than 8,000,000 pounds were raised. The figure was about 6,000,000 in 1808; but the output declined during the succeeding decades, and forty years later was only 375,000 pounds. The amount produced in 1885 was 986,000 pounds; and

there has been a gradual increase, so that the crop has been large enough to permit the exportation of 1,000,000 to 2,000,000 pounds, or more, since the beginning of the present century. Exports in 1901 were 1,449,000 pounds; in 1908, 2,266,000 pounds; and in 1918, 2,144,000 pounds.

OTHER WEST INDIAN ISLANDS. Some little coffee is gathered for home consumption in many other West Indian islands, but little is exported. The island of Martinique, which is said to have seen the introduction of the coffee plant into the western hemisphere, does not now raise enough for its own use. Cuba was formerly one of the important centers of production; but for various reasons the industry declined, and for many years the country has imported most of its coffee supply. A century ago, the plantations numbered 2,067; and the annual exportation amounted to 50,000,000 pounds. When the island became independent, steps were taken to revive coffee planting; and in 1907 there were 1,411 plantations and 3,662,850 trees, producing 6,595,700 pounds of coffee. The Cubans, however, now find it convenient to obtain their coffee from the neighboring island of Porto Rico and from other sources; and importations have remained around 20,000,000 pounds a year. In Trinidad and Tobago, exports have reached as high as 1,000,000 pounds a year; but in recent times they have fallen off heavily. St. Vincent exported 485 pounds in 1917, and Grenada, 251 pounds in 1916. The Leeward Islands exported 1,415 pounds in 1917, and 2,946 pounds in 1916, the acreage being 274, the same as for many years past.

ARABIA. The home of the famous Mocha coffee still produces considerable quantities of that variety, although the output, comparatively speaking, is not large. The chief district is the vilayet of Yemen; and the product reaches the outside world mainly through the port of Aden, although before the war much of this coffee was exported through Hodeida. The port of Massowah, in the last two or three years, has been drawing some of the supply of Mocha for export. No statistics are available to show the production of Mocha coffee; but an estimate made by the oldest coffee merchant in Aden places the average annual output at 45,000 bags of 176 pounds each, or 7,920,000 pounds. Although this is the only district in the world that can produce the particular grade of coffee known as Mocha, there is little systematic cultivation, and large areas of good coffee land are planted to other crops to provide food for the natives. When transportation facilities are provided, so that this food can be imported, it is predicted that the output of Mocha coffee will be doubled.

Aden is a great transhipping port for coffee from Asia and Africa, and more than half its exports are re-exports from points outside of Arabia. The following figures will show the proportion of Arabian coffee coming into Aden for export as compared with that from other producing sections:

ADEN'S COFFEE RECEIPTS FOR RE-EXPORT

Imports from	1916-17 (pounds)	1917-18 (pounds)	1918-19 (pounds)
Abyssinia (via Jibuti)	4,529,280	6,174,896	4,337,760
Mocha and Ghizan	3,555,104	6,562,752	3,075,024
Somaliland (British)	394,128	396,592	245,840
Straits Settlements	672,224		
Zanzibar and Pemba	92,512	795,312	764,288
All other countries	162,064	307,104	323,616
Total	9,405,312	14,236,656	8,746,528

BRITISH INDIA. Cultivation of coffee was begun systematically in India in 1840; and twenty years later, the country exported about 5,860,000 pounds. For the next eight years the exports remained at about that figure; but in 1859 they amounted to 11,690,000 pounds; and by 1864 they had doubled, rising in that year to 26,745,000 pounds. They have continued at between 20,000,000 and 60,000,000 pounds ever since, reaching their highest point in 1872 with 56,817,000 pounds. In recent years, production and exportation have declined; the exports in 1920 being only 30,526,832 pounds. The area under coffee has been between 200,000 and 300,000 acres for fifty years or more, reaching its highest point in 1896, with 303,944 acres. Recently the area has been slowly decreasing.

CEYLON. The island of Ceylon was formerly one of the important producers of coffee; and the industry was a flourishing one until about 1869, when a disease appeared that in ten or fifteen years practically ruined the plantations. Production has gone on since then, but at a steadily declining rate. In late years, the island has not produced enough for its own use, and is now ranked as an importer rather than as an exporter. It is said that systematic cultivation was carried on in Ceylon by the Dutch as early as 1690; and shipments of 10,000 to 90,000 pounds a year

were made all through the eighteenth century, exports in one year, 1741, going as high as 370,000 pounds. The English took the island in 1795, and thirty years later, they began to expand cultivation. Exports had risen to 12,400,000 pounds in 1836; and they continued to increase to a high point of 118,160,000 pounds in 1870; but in the next thirty years they declined, until they were only 1,147,000 pounds in 1900. The total acreage in coffee at one time reached as high as 340,000; but as the coffee trees were affected by the leaf disease, this land was turned to tea; and in 1917 there were only 810 acres left in coffee.

Dutch East Indies. The year 1699 saw the importation from the Malabar coast of India to Java of the coffee plants which were destined to be the progenitors of the tens of millions of trees that have made the Dutch East Indies famous for two hundred years. Twelve years afterward, the first trickle of the stream of coffee that has continued to flow ever since found its way from Java to Holland, in a shipment of 894 pounds. About 216,000 pounds were exported in 1721; and soon thereafter, shipments rose into the millions of pounds.

From 1721 to 1730 the Netherlands East India Co. marketed 25,048,000 pounds of Java coffee in Holland; and in the decade following, 36,845,000 pounds. Shipments from Java continued at about the latter rate until the close of the century, although in the ten years 1771-80 they reached a total of 51,319,000 pounds. The total sales of Java coffee in Holland for the century were somewhat more than a quarter of a billion pounds, which represented pretty closely the amount produced.

With the beginning of the nineteenth century, coffee production soon became much heavier; and in 1825 Java exported, of her own production, some 36,500,000 pounds, besides 1,360,000 pounds brought from neighboring islands to which the cultivation had spread. In 1855, the amount was 168,100,000 pounds of Java coffee, and 4,080,000 pounds of coffee from the other islands. This is the highest record for the half-century following the beginning of the regular reports of exports in 1825. From 1875 to 1879 the average annual yield was 152,184,000 pounds. In 1900, production in Java was 84,184,000 pounds; in 1910, it was 31,552,000 pounds, and in 1915 it had jumped to 73,984,000 pounds.

On the west coast of Sumatra coffee was regularly cultivated, according to one account, as early as 1783; but it was not until about 1800, that exportation began, with about 270,000 pounds. By 1840, exports were averaging 11,000,000 to 12,250,000 pounds per year. Official records of production date from 1852, in which year the figures were 16,714,000 pounds. Five years later the recorded yield was 25,960,000 pounds, the high-water mark of Sumatra production. The total output in 1860 was 21,400,000 pounds; and 22,275,000 pounds in 1870. The average from 1875 to 1879 was 17,408,000 pounds; and from 1895 to 1899, it was 7,589,000 pounds. The yield was 5,576,000 pounds in 1900; 1,360,000 in 1910; and 7,752,000 in 1915.

In Celebes, the first plants were set out about 1750; but seventy years later production was only some 10,000 pounds. This soon increased to half a million pounds; and from 1835 to 1852 the yield ran between 340,000 and 1,768,000 pounds. From 1875 to 1879, production averaged 2,176,000 pounds; from 1885 to 1889, 2,747,000 pounds; and from 1895 to 1899, 707,000 pounds. In 1900, it was 680,000 pounds; in 1910, 272,000 pounds; and in 1915, 272,000 pounds.

Planting under government control, largely with forced labor, has been the special feature of coffee cultivation in the Dutch East Indies. At first the government exercised what was practically a monopoly; but private planting was more and more permitted; and in the latter part of the nineteenth century, the amount of coffee produced on private plantations exceeded that raised by the government. The government has now entirely given up the business of coffee production.

The total production of coffee in Java, Sumatra, and Celebes, in 1920, in piculs of 136 pounds, was as follows:

Dutch East Indies' Coffee Production

Kind of Coffee	*Quantity Produced in* Java (piculs)	Sumatra (piculs)	Celebes and Bali (piculs)	Total (piculs)
Liberica .	14,972	6,243	2,074	23,289
Java	16,312	24,291	70,621	111,224
Robusta ..	411,235	256,645	4,998	672,878
Total ..	442,519	287,179	77,693	807,391

Straits Settlements. Trade in coffee is a transhipping trade, Singapore acting as a

clearing center for large quantities of coffee from the neighboring islands. In 1920, the imports were 25,914,267 pounds; and the exports, 26,856,000 pounds.

FEDERATED MALAY STATES. The acreage in coffee in the Federated Malay States is steadily declining. In 1903, coffee plantations covered 22,700 acres; in 1913, 7,695 acres; and in 1916, 4,312 acres. There was formerly a considerable export; but apparently local production is now required for home consumption, as in 1920 exports were practically nothing, and about 9,800 pounds were imported.

BRITISH NORTH BORNEO. Total exports of coffee have reached as high as 50,000 pounds, which was the figure in 1904; but they are much less now; being 5,973 pounds in 1915; 15,109 pounds in 1916; and 1,980 pounds in 1918.

SARAWAK. Previous to 1912, the exportation of coffee from Sarawak was 20,000 to 45,000 pounds annually. In 1912, a coffee estate of 300 acres was abandoned, and since that time there have been no exports.

PHILIPPINES. Coffee raising was formerly one of the chief industries of the Philippines; but it has now greatly declined, partly because of the blight. Exports reached their highest point in 1883, when 16,805,000 pounds were shipped. Since then, they have fallen off steadily to nothing; and the islands are now importers, although still producing considerable for their own use. The area still under cultivation in 1920 was 2,700 acres; and the production in that year was given as 2,710,000 pounds, as compared with 1,580,000 pounds in 1919, and an average of 1,500,000 pounds for the previous five years.

GUAM. Coffee is a common plant on the island but is not systematically cultivated. There is no exportation, but a Navy Department report says that the possible export is not less than seventy-five tons annually.

HAWAII. A certain amount of coffee has been produced in the Hawaiian Islands for many years, exports being recorded as 49,000 pounds in 1861; as 452,000 pounds in 1870; and as 143,000 pounds in 1877. The trees grow on all the islands; but nearly all the coffee produced is raised on Hawaii. The trees are not carefully cultivated; but the coffee has an excellent flavor. The amount of land planted to coffee is about 6,000 acres. The exports go mostly to continental United States. The exports are increasing, the figures up to 1909 ranging usually between 1,000,000 and 2,000,000 pounds, and now usually running between 2,000,000 and 5,000,000 pounds. Including shipments to continental United States, Hawaii exported 5,775,825 pounds in 1918; 3,649,672 pounds in 1919; 2,573,300 pounds in 1920; and 4,979,121 pounds in 1921.

AUSTRALIA. Queensland is the only state of the Commonwealth in which coffee growing has been at all extensively tried; and here the results have, up to the present time, been far from satisfactory. The total area devoted to this crop reached its highest point in the season 1901 - 02 when an area of 547 acres was recorded. The area then continuously declined to 1906 - 07, when it was as low as 256 acres. In subsequent seasons the area fluctuated somewhat; but, on the whole, with a downward tendency. In 1919 - 20, only 24 productive acres were recorded, with a yield of 16,101 pounds. The country is now listed among the consuming rather than the producing countries.

ABYSSINIA. This country, usually credited with being the original home of the coffee plant, still has, in its southern part, vast forests of wild coffee whose extent is unknown, but whose total production is believed to be immense. It is of inferior grade, and reaches the market as "Abyssinian" coffee. There is also a large district of coffee plantations producing a very good grade called "Harari", which is considered almost, if not quite, the equal of the Arabian Mocha. This is usually shipped to Aden for re-export. Abyssinia's coffee reaches the outside world through three different gate-ways; and as the neighboring countries, through which the produce passes, also produce coffee, no accurate statistics are available to show the country's annual export. The total probably ranges from 10,000,000 to 20,000,000 pounds a year. Coffee was shipped from Abyssinia to the extent of 6,773,800 pounds in 1914, over the Franco-Ethiopian railroad; 10,054,000 pounds in 1915; and 9,064,000 pounds in 1916. Export figures of the port of Massowah include a large amount of Abyssinian coffee, but the proportion is unknown. At this port 108,680 pounds of coffee were exported in 1914; and 1,221,880 pounds in 1915. Abyssinian coffee exported by way of the Sudan amounted to 232,616 pounds in

1914; to 140,461 pounds in 1915; and to 4,164,600 pounds in 1916.

BRITISH EAST AFRICAN PROTECTORATE. The acreage in coffee has greatly increased in recent years. It was estimated at 1,000 acres in 1911; and by 1916, it had grown to 22,200 acres. Production, as shown by the exports, has likewise increased greatly; and exports in recent years have averaged about 8,000,000 pounds a year. They were 10,984,000 pounds in 1917; and were 18,735,000 pounds in 1918.

UGANDA PROTECTORATE. The acreage in coffee has been steadily increasing, as shown by the following figures: 1910, 697 acres; 1914, 19,278 acres; 1916, 23,857 acres; 1917, 22,745 acres. In 1909, 33,440 pounds of coffee were produced; and by 1918, this had grown to 10,000,000 pounds. The average for the five years, 1914-18, was 5,076,000 pounds.

NYASALAND PROTECTORATE. Twenty-five years ago, this colony exported coffee in amounts ranging from 300,000 to more than 2,000,000 pounds. Production has now so declined, that only 122,000 pounds were exported in 1918; and the average for recent years has been about 92,000 pounds. The acreage in bearing in 1903 was 8,234; and in 1917 it was 1,237.

NIGERIA. Production has been falling off in recent years. Exports were 35,000 pounds in 1896; 57,000 pounds in 1901; and 70,000 pounds in 1909. In 1916 and 1917, however, they were only about 3,000 pounds.

GOLD COAST. This colony formerly produced considerable coffee, exporting 142,000 pounds in 1896. There have been no exports in recent years, except about 440 pounds in 1916, and 660 pounds in 1917.

SOMALILAND PROTECTORATE. Exports of coffee were more than 7,500,000 pounds in 1897, indicating a very extensive production. But since then, there has been a steady decline; and in 1918 only about 440,000 pounds were shipped.

SOMALI COAST (FRENCH). Exports of coffee from this colony amounted to more than 5,000,000 pounds in 1902; and since then, they have remained fairly steadily at that figure, showing considerable increase in late years. Total exports in 1917 were 11,200,000 pounds.

ITALIAN SOMALILAND. Some coffee appears to be grown in this colony; but exports have been inconsiderable for many years.

SIERRA LEONE. Production has been steadily declining for twenty years. Exports were 33,376 pounds in 1903; 17,096 pounds in 1913; and 8,228 pounds in 1917.

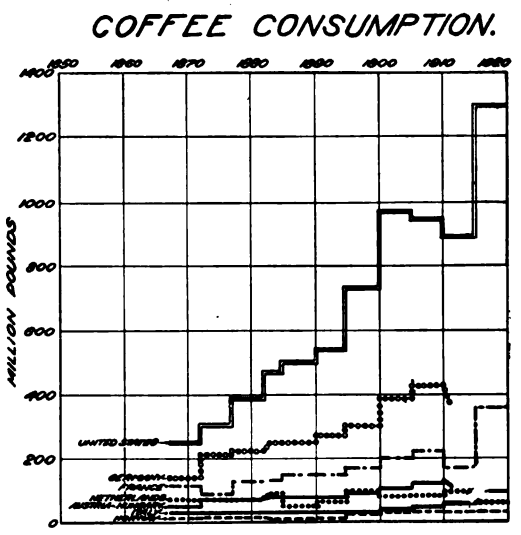
MAURITIUS. In former times this island was an important coffee producer, exports in the early part of the nineteenth century running as high as 600,000 pounds. To-day there is practically no export, and only about 30 acres are in bearing, producing 4,000 to 8,000 pounds a year.

REUNION. This island also was once a notable grower of coffee. A century ago, production was estimated as high as 10,000,000 pounds; and this rate of output continued well through the nineteenth century. In the present century, production has fallen off; and only about 530,000 pounds were exported in 1909. The decrease has continued, so that the average in recent years has been only about 25,000 pounds.

Coffee Consumption

Of the million or more tons of coffee produced in the world each year, practically all — with the exception of that which is used in the coffee-growing countries themselves — is consumed by the United States and western Europe, the British dominions, and the non-producing countries of South America. Over that vast stretch of territory beginning with western Russia, and extending over almost the whole of Asia, coffee is very little known. In the consuming regions mentioned, moreover, consumption is concentrated in a few countries, which together account for some ninety percent of all the coffee that enters the world's markets. These are, the United States, which now takes more than one-half, and Germany, France, Spain, Italy, Holland, Belgium, Switzerland, and Scandinavia.

The United Kingdom stands out conspicuously among the nations of western Europe as a small consumer of coffee, the per capita consumption in that country being only about two-thirds of a pound each year. France and Germany are by far the biggest coffee buyers of Europe so far as actual quantity is concerned; although some of the other countries mentioned drink much more coffee in proportion to the population. The Mediterranean countries and the



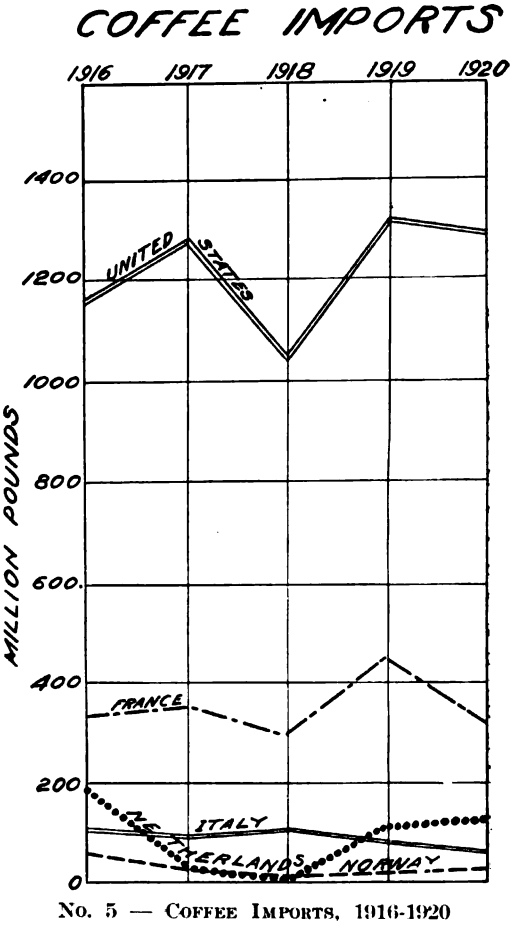
No. 4 — World's Coffee Consumption, 1850-1920
Diagram showing the relationship between the leading coffee-consuming countries

Balkans are of only secondary importance as coffee drinkers. Among the British dominions, the Union of South Africa takes much the largest amount, doubtless because of the Dutch element in its population; while Canada, Australia, and New Zealand show the influence of the mother country, consumption per head in the last two being no greater than in England.

In South America, Brazil, Bolivia, and all the countries to the north, are coffee producers. Of the southern countries, Argentina is the chief coffee buyer, with Chile second. In the western hemisphere, however, the largest per capita coffee consumer is the island of Cuba, which raises some coffee of its own and imports heavily from its neighbors.

The list of coffee-consuming countries includes practically all those that do not raise coffee, and also a few that have some coffee plantations, but do not grow enough for their own use. These countries are listed on page 287. Consumption figures can be determined with fair accuracy by the import figures; although in some countries, where there is a considerable transit trade, it is necessary to deduct export from import figures to obtain actual consumption figures. The import figures given are the latest available for each country named.

On account of the very wide fluctuations in imports during the war and the period following the war, per capita figures of consumption are of only relative value, as they have naturally changed radically in recent years. For the most part, however, the trade has about swung back to normal; and per capita figures based on the amounts retained for consumption, as given in the General Coffee Consumption Table, are fairly close to those for the years before the war. As per capita calculations must take into account population as well as amounts of coffee consumed; and as population figures are usually estimates, the results arrived at by different authorities are likely to vary slightly, although usu-



No. 5 — Coffee Imports, 1916-1920
In this diagram a comparison is drawn between the coffee imports of the leading consuming countries over a critical 5-year period

ally they are not far apart. In figuring the per capita amounts in the table on page 288, latest available estimates of population have been used. The figures show that the following are the ten leading

General Coffee Consumption Table

Country	*Year*	*Imports* (pounds)	*Exports* (pounds)	*Consumption* (pounds)
United States	1921[a]	1,345,366,943[b]	41,813,197[b]	1,303,553,746
Canada	1921[c]	17,517,353	20,349	17,497,004
Newfoundland	1920[c]	46,813[d]		46,813
United Kingdom	1921[a]	34,363,728[d]		34,360,128
France	1921[a]	322,419,884	1,154,769	321,265,115
Spain	1920	48,518,854	5,033	48,513,821
Portugal	1919[a]	6,926,575	1,258,271	5,668,304
Belgium	1921[a]	105,365,586	21,541,049	83,824,537
Holland	1921[a]	135,566,943	66,567,702	69,999,241
Denmark	1921[a]	46,571,954	3,449,537	43,122,417
Norway	1921[a]	29,835,544	169,921	29,665,623
Sweden	1921[a]	89,660,766		89,660,766
Finland	1921[a]	27,968,355		27,968,355
Russia	1916	9,801,014		9,801,014
Austria-Hungary (former)	1917	17,966,167	56,217	17,909,950
Austria	1921[e]	5,128,781	79,365	5,049,416
Germany (former)	1913	371,130,520	1,783,521	369,346,999
Germany (present)	1921[f]	167,675,258	210,535	167,464,723
Poland	1920	7,612,526	26,781	7,585,745
Bulgaria	1914	1,300,493		1,300,493
Rumania	1919	5,134,198	66,757	5,067,441
Greece	1920[g]	13,118,626		13,118,626
Switzerland	1921[a]	31,582,879	47,619	31,535,260
Italy	1920	66,509,255	14,330	66,494,925
Algeria	1920	17,273,041		17,273,041
Tunis	1920	3,458,018		3,458,018
Egypt	1921[a]	20,939,542	218,938	20,720,604
Union of So. Africa	1920	28,752,538	954,181[h]	27,798,357
Northern Rhodesia	1920	43,880	8,263	35,617
Southern Rhodesia	1920	325,900	10,064	315,836
Mozambique	1919	111,614	78,973	32,641
Ceylon	1920	1,853,537	2,240	1,851,297
China	1920	613,217	297,663	315,554
Japan	1920	684,826		684,826
Philippines	1920	3,475,530	26	3,475,504
Canary Islands	1917	529,104		529,104
Cyprus	1918	451,880		451,880
Australia	1920[c]	2,502,429	263,430[i]	2,238,999
New Zealand	1920	304,737	21,104	283,633
Cuba	1920[c]	39,983,001	1,305	39,981,696
Martinique	1918	335,099	10,362	324,737
Panama	1920	216,923	518	216,405
Argentina	1919	37,541,020		37,541,020
Chile	1920	12,357,929		12,357,929
Uruguay	1921[g]	4,896,507		4,896,507
Paraguay	1920	262,737		262,737

[a] Preliminary figures.
[b] Figures are for continental U. S. Imports include both foreign coffee and coffee from our island possessions. Exports include both foreign and domestic exports from continental U. S. and also exports to our island possessions.
[c] Fiscal year. [d] Entered for home consumption.
[e] First six months. Imports in 1920 were 6,042,808 pounds; exports 93,034 pounds.
[f] Eight months, May - December. [g] First eleven months.
[h] Exports of foreign coffee. Domestic exports were 48,463 pounds.
[i] Exports of foreign coffee. Domestic exports were 208,445 pounds.

countries in the per capita consumption of coffee in pounds:

1. Sweden	15.25	6. Norway	10.95
2. Cuba	13.79	7. Holland	10.22
3. Denmark	13.19	8. Finland	8.25
4. United States.	12.09	9. Switzerland .	8.17
5. Belgium	11.06	10. France	7.74

The per capita consumption of the most important coffee-consuming countries, based on the large table, is given with the 1913 per capita figures for comparison:

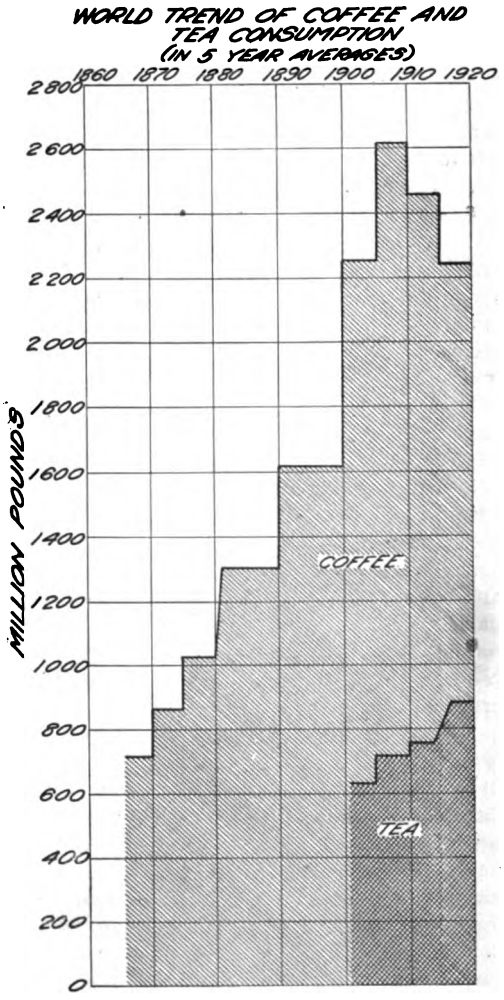
PER CAPITA COFFEE CONSUMPTION TABLE

Country	*Year*	*Pounds*	*Pds.*, 1913
United States	1921	12.09	8.90[b]
Canada	1921[a]	1.93	2.17[c]
Newfoundland	1920[a]	0.19	0.19[b]
United Kingdom ...	1921	0.72	0.61[b]
France	1921	7.74	6.41
Spain	1920	2.33	1.64
Portugal	1919	0.86	1.16
Belgium	1921	11.06	12.27
Holland	1921	10.22	18.80
Denmark	1921	13.19	12.85
Norway	1921	10.95	12.29
Sweden	1921	15.25	13.41
Finland	1921	8.25	8.85
Russia	1916	0.05	0.16
Austria-Hungary ...	1917	0.34	2.54
Germany	1921	4.10	5.43
Roumania	1919	0.29	1.04
Greece	1920	2.97	1.19
Switzerland	1921	8.17	6.48
Italy	1920	1.84	1.79
Egypt	1921	1.53	1.15
Union of So. Africa.	1920	3.80[d]	4.19[d]
Ceylon	1920	0.43	0.36
China	1920	0.001	0.01
Japan	1920	0.01	0.004
Cuba	1920[a]	13.79	10.00
Argentina	1919	4.40	3.74
Chile	1920	3.06	3.04
Uruguay	1921	3.61	[e]
Paraguay	1920	0.26	[e]
Australia	1920[a]	0.42	0.64
New Zealand	1920	0.24	0.29

[a] Fiscal year.
[b] Fiscal year 1913.
[c] Fiscal year ending March 31, 1914.
[d] Including both white and colored population.
[e] Not available.

Tea and Coffee in England and the U. S.

The rise of the United States as a coffee consumer in the last century and a quarter has been marked, not only by steadily increased imports as the population of the country increased, but also by a steady growth in per capita consumption, showing that the beverage has been continually advancing in favor with the American people. To-day it stands at practically its highest point, each individual man, woman, and child having more than 12 pounds a year, enough for almost 500 cups, allotted to him as his portion. This is four times



No. 6 — WORLD'S CONSUMPTION OF TEA AND COFFEE
Diagram showing their relationship, 1900-1920

as much as it was a hundred years ago; and more than twice as much as it was in the years immediately following the Civil War. In general it is fifty percent more than the average in the twenty years preceding 1897, in which year a new high level of coffee consumption was apparently established, the per capita figure for that year being 10.12 pounds, which has been approximately the average since then.

Since the advent of country-wide prohibition in the United States on July 1, 1919, about two pounds more coffee per person, or 80 to 100 cups, have been consumed than before. Part of this increase is doubtless to be charged to prohibition; but it is yet too early to judge fairly as to the exact effect of "bone-dry" legisla-

tion on coffee drinking. The continued growth in the use of coffee in the United States has been in decided contrast to the per capita consumption of tea, which is less now than half a century ago.

In the United Kingdom, the reverse condition prevails. Tea drinking there steadily maintains a popularity which it has enjoyed for centuries; while coffee apparently makes no advance in favor. In this respect, the country is sharply distinguished from its neighbors of western Europe, in many of which coffee drinking has been much heavier, considering the population, even than in the United States. The contrast between the tastes of the two countries in beverages is shown clearly by the per capita figures of tea and coffee consumption for half a century, as they appear in the table, next column.

Coffee Consumption in Europe

On the continent of Europe, however, coffee enjoys much the same sort of popularity that it does in the United States. The leading continental coffee ports are Hamburg, Bremen, Copenhagen, Amsterdam, Rotterdam, Antwerp, Havre, Bordeaux, Marseilles, and Trieste; and the nationalities of these ports indicate pretty well the countries that consume the most coffee. The northern ports are transhipping points for large quantities of coffee going to the Scandinavian countries, as well as importing ports for their own countries; and these countries have been among the leading coffee drinkers, per head of population, for many decades. Norway, for instance, in 1876 was consuming about 8.8 pounds of coffee per person; Sweden, 5 pounds; and Denmark, 5.2 pounds. The per capita consumption of various other countries at about the same period, 1875 to 1880, has been estimated as follows: Holland, 17.6 pounds; Belgium, 9.1 pounds; Germany, 5.1 pounds; Austria-Hungary, 2.2 pounds; Switzerland, 6.6 pounds; France, 3 pounds; Spain, 0.2 pounds; Portugal, 0.7 pounds; and Greece, 1.6 pounds.

Today, the leading country of the world in point of per capita consumption is Sweden (15.25 pounds); but Holland held that position for a long while. During the World War the disturbance of trade currents, and the high price of coffee, greatly reduced the amount of coffee drinking; and

TEA AND COFFEE CONSUMPTION PER CAPITA

Year	*United States*		*United Kingdom*	
	Coffee pounds	Tea pounds	Coffee pounds	Tea pounds
1866	4.96	1.17	1.02	3.42
1867	5.01	1.09	1.04	3.68
1868	6.52	.96	1.00	3.52
1869	6.45	1.08	.94	3.63
1870	6.00	1.10	.98	3.81
1871	7.91	1.14	.97	3.92
1872	7.28	1.46	.98	4.01
1873	6.87	1.53	.99	4.11
1874	6.59	1.27	.96	4.23
1875	7.08	1.44	.98	4.44
1876	7.33	1.35	.99	4.50
1877	6.94	1.23	.96	4.52
1878	6.24	1.33	.97	4.66
1879	7.42	1.21	.99	4.68
1880	8.78	1.39	.92	4.57
1881	8.25	1.54	.89	4.58
1882	8.30	1.47	.89	4.69
1883	8.91	1.30	.89	4.82
1884	9.26	1.09	.90	4.90
1885	9.60	1.18	.91	5.06
1886	9.36	1.37	.87	4.92
1887	8.53	1.49	.80	5.02
1888	6.81	1.49	.83	5.03
1889	9.16	1.25	.76	4.99
1890	7.77	1.32	.75	5.17
1891	7.94	1.28	.76	5.36
1892	9.59	1.36	.74	5.43
1893	8.23	1.32	.69	5.40
1894	8.01	1.34	.68	5.51
1895	9.24	1.39	.70	5.65
1896	8.08	1.32	.69	5.75
1897	10.04	1.56	.68	5.79
1898	11.59	.93	.68	5.83
1899	10.72	.97	.71	5.95
1900	9.84	1.09	.71	6.07
1901	10.43	1.12	.76	6.16
1902	13.32	.92	.68	6.07
1903	10.80	1.27	.71	6.04
1904	11.67	1.31	.68	6.02
1905	11.98	1.19	.67	6.02
1906	9.72	1.06	.66	6.22
1907	11.15	.96	.67	6.26
1908	9.82	1.03	.66	6.24
1909	11.43	1.24	.67	6.37
1910	9.33	.89	.65	6.39
1911	9.29	1.05	.62	6.47
1912	9.26	1.04	.61	6.49
1913	8.90	.96	.61	6.68
1914	10.14	.91	.63	6.89
1915	10.62	.91	.71	6.87
1916	11.20	1.07	.66	6.56
1917	12.38	.99	1.02	6.03
1918	10.43	1.40	1.19	6.75
1919	9.13	.87	.76	8.43
1920	12.78	.84	.74	8.51

Figures for all except most recent years are taken from the *Statistical Abstract* publications of the two countries. For the United States the figures given apply to fiscal years ending June 30, and for the United Kingdom to calendar years.

the Dutch took to drinking tea in considerable quantities.

FRANCE. Second only to the United States, in the total amount of coffee consumed, is France; although that country before the war occupied third place, being passed by Germany. Havre is one of the great coffee ports of Europe; and has a coffee exchange organized in 1882, only a short time after the Exchange in New York began operations. France draws on all the large producing regions for her coffee; but is especially prominent in the trade in the West Indies and the countries around the Caribbean Sea. Imports in 1921 (preliminary) amounted to 322,419,884 pounds; exports to 1,154,769 pounds; and net consumption, to 321,265,115 pounds.

GERMANY. Hamburg is one of the world's important coffee ports; and in normal times coffee is brought there in vast amounts, not only for shipment into the interior of Germany, but also for transhipment to Scandinavia, Finland and Russia. Up to the outbreak of the war, Germany was the chief coffee-drinking country of Europe. During the blockade, the Germans resorted to substitutes; and after the war because of high prices, there was still some consumption of them. German coffee imports since the war have not quite climbed back to their former high mark; and the per capita consumption, judged by these figures is still somewhat low. Importations amounted to 90,602,000 pounds in 1920. The amount of total imports was 371,130,520 pounds in 1913; total exports, 1,783,521 pounds; and net imports, 369,346,999 pounds.

NETHERLANDS. Netherlands is one of the oldest coffee countries of Europe, and for centuries has been a great transhipping agent, distributing coffee from her East Indian possessions and from America among her northern neighbors. Before sending these coffee shipments along, however, she kept back enough plentifully to supply her own people, so that for many years before the war she led the world in per capita consumption. As far back as 1867 - 76, coffee consumption was averaging more than 13 pounds per capita. In the year before the war, the average was 18.8 pounds. The blockade, and other abnormal conditions during the war, threw the trade off; and it is still subnormal. In 1920 the net imports were about 96,000,000 pounds, which would give a per capita consumption of about 14 pounds if it all went into consumption. But part of it was probably stored for later exportation, as indicated by the figures for 1921, which show heavy exports and a consequent lower figure for consumption. Eighty per cent of the Netherlands coffee trade is handled through Amsterdam.

Consumption of coffee is now slowly going back to normal, but the change in source of imports — which before the war came largely from Brazil but which war conditions turned heavily toward the East Indies — is still in evidence. Per capita consumption of coffee in Holland up to the outbreak of the war was as follows:

COFFEE CONSUMPTION PER CAPITA IN HOLLAND

Year	*Pounds*	*Year*	*Pounds*
1847 - 56	9.6	1907	14.9
1857 - 66	7.1	1908	14.3
1867 - 76	13.3	1909	16.7
1877 - 86	16.7	1910	15.7
1887 - 96	12.8	1911	15.8
1897 - 1906 ..	16.7	1912	12.3
1906	17.2	1913	18.8

OTHER COUNTRIES OF EUROPE. Denmark, Norway, and Sweden are all heavy coffee drinkers. In 1921 Sweden had the highest per capita consumption in the world, 15.25 pounds. Before the war, these three countries each consumed about as much per capita as the United States does to-day, 12 to 13 pounds. The 1921 imports for consumption[1] were as follows: Denmark, 43,122,417 pounds; Norway, 29,665,623 pounds; Sweden, 89,660,766 pounds. Austria-Hungary was formerly an important buyer of coffee, large quantities coming into the country yearly through Trieste. Imports in 1913 totaled 130,951,000 pounds; and in 1912, 124,527,000 pounds. In 1917 the war cut down the total to 17,910,000 pounds net consumption. Finland shares with her neighbors of the Baltic a strong taste for coffee, importing, in 1921, 27,968,000 pounds, about 8.25 pounds per capita. In the same year, Belgium had a net importation of 83,824,000 pounds.

Spain, in 1920, consumed 48,513,821 pounds. Portugal, in 1919, imported 6,926,575 pounds; and exported 1,258,271 pounds, leaving 5,668,304 pounds for home consumption. Coffee is not especially popular in the Balkan States and Italy; importations into the last-named country in 1920 amounting to 66,494,925 pounds net. Switzerland is a steady coffee drinker, con-

[1] The 1921 figures for all countries given are preliminary.

A MEETING OF THE COFFEE BROKERS OF AMSTERDAM, 1820
Reproduced from an old print

suming 31,535,260 pounds in 1921. Russia was never fond of coffee; and her total imports in 1917, according to a compilation made under Soviet auspices, were only 4,464,000 pounds.

OTHER COUNTRIES. The Union of South Africa, in 1920, imported 27,798,000 pounds net, or about 3.8 pounds per capita. Cuba purchased 39,981,696 pounds in the fiscal year 1920; Argentina, 37,541,000 pounds in 1919; Chile, 12,358,000 pounds in 1920; Australia, 2,239,000 pounds in 1920; and New Zealand, 283,633 pounds in that year.

Three Centuries of Coffee Trading

The story of the development of the world's coffee trade is a story of about three centuries. When Columbus sailed for the new world, the coffee plant was unknown even as near its original home as his native Italy. In its probable birthplace in southern Abyssinia, the natives had enjoyed its use for a long time, and it had spread to southwestern Arabia; but the Mediterranean knew nothing of it until after the beginning of the sixteenth century. It then crept slowly along the coast of Asia Minor, through Syria, Damascus, and Aleppo, until it reached Constantinople about 1554. It became very popular; coffee houses were opened, and the first of many controversies arose. But coffee made its way against all opposition, and soon was firmly established in Turkish territory.

In those deliberate times, the next step westward, from Asia to Europe, was not taken for more than fifty years. In general, its introduction and establishment in Europe occupied the whole of the seventeenth century.

The greatest pioneering work in coffee trading was done by the Netherlands East India Company, which began operations in 1602. The enterprise not only promoted the spread of coffee growing in two hemispheres; but it was active also in introducing the sale of the product in many European countries.

Coffee reached Venice about 1615, and Marseilles about 1644. The French began importing coffee in commercial quantities in 1660. The Dutch began to import Mocha coffee regularly at Amsterdam in 1663; and by 1679 the French had developed a considerable trade in the berry between the Levant and the cities of Lyons and Marseilles. Meanwhile, the coffee drink had become fashionable in Paris, partly through its use by the Turkish ambassador, and the first Parisian *café* was opened in 1672. It is significant of its steady popularity since then that the name *café*, which is both French and Spanish for coffee, has

A°. 1790.

OOST-INDISCHE COMPAGNIE.

DE Bewindhebberen van de Generale Nederlandsche Geoctroyeerde Oost-Indische Compagnie / ter Vergadering van de Zeventienen / presenteeren in de Maanden April en May dezes Jaars 1790. in de Respective Kameren / in 't Openbaar te veilen / de navolgende Goederen / en dat by Verdeelinge in de Kameren / en ten dage als volgt:

		In de Kamer Amsterdam op Maandag den 12 April 1790.	In de Kamer Zeeland op Maandag den 19 April 1790	In de Kamer Delft, op Dingsdag den 27 April 1790	In de Kamer Rotterdam op Donderdag den 29 April 1790	In de Kamer Hoorn op Dingsdag den 4 May 1790	In de Kamer Enkhuizen op Donderdag den 6 May 1790.
5562	Baalen Bruyne Peeper -	2470	1500	256	400	356	580
420000	℔ Canneel in Fardeelen -	210000	105000	26250	26250	26250	26250
8000	-- Blanke Fouly -	4000	2000	500	500	500	500
10000	-- Bruine dito -	2000	6950	——	870	180	——
32000	-- Ongegarbuleerde Fouly -	15375	8000	2000	2000	2000	2625
250000	-- Nagelen - -	125000	62500	15625	15625	15625	15626
100000	-- Gestoken Noten Muscaten	82760	3920	650	170	6250	6250
6000	ps Mannetges Nooten -	2250	1500	——	750	750	750
500	-- Geconfyte dito -	400	100	——	——	——	——
120000	℔ Sappanhout Bimaa's -	35000	85000	——	——	——	——
10000	-- dito Javas - -	——	10000	——	——	——	——
179920	-- Poeder Suiker -	——	179920	——	——	——	——
21875	-- Thin Bankas - -	——	21875	——	——	——	——
1124	-- Cardamom Java's -	768	356	——	——	——	——
688	-- Lange Peeper - -	458	230	——	——	——	——
3525	- Cubebe of Staartpeeper	2350	1175	——	——	——	——
1388	- Sago Mallax - -	——	1388	——	——	——	——
47547	ps Handrottingen op Vragt	45178	2369	——	——	——	——
15000	℔ Catoene Gaaren Java's -	3625	11375	——	——	——	——
760000	- Coffy Javas - -	200000	560000	——	——	——	——
2141	- Thee op Vragt -	2141	——	——	——	——	——

Als meede de Goederen van Particulieren, aangehouden Goederen en verdere Restanten en Kleinigheeden, die by de Respective Kameren aan handen mogten zyn

De bovenstaande Bruine Peeper, Canneel, Fouly, Nagelen, gestooke Nooten Muscaten en Mannetges Nooten, worden Verkogt met een stilstand tot den Eerste Maart 1791 Egter behoud de Compagnie aan haar de Facultyt om de Bruine Peeper, welke voor den Eerste April 1790 nog mogt worden aangebragt, ten allen tyden te mogen Verkoopen, en worden alle de andere aangeslaagen Goederen, met de Gereserveerde Scheepen aangebragt (en by het Nijaars Verkoopbillet vermeld) Verkogt met een stilstand tot den Eerste Augustus 1790.

Te Amsterdam, by NICOLAAS BYL, op den Nieuwendyk, Drukker van de Oost-Indische Compagnie.
Gedrukt den 18 February 1790. Met Privilegie

BILL OF PUBLIC SALE OF COFFEE, ETC., 1790

Reproduction of an advertisement by the Dutch East India Company

come to mean a general eating or drinking place.

Active trading in coffee began in Germany about 1670, and in Sweden about 1674.

Trading in coffee in England followed swiftly upon the heels of the opening of the first coffee house in London in 1652. By 1700, the trade included not only exporting and importing merchants, but wholesale and retail dealers; the latter succeeding the apothecaries who, up to then, had enjoyed a kind of monopoly of the business.

Trade and literary authorities[1] on coffee trading tell us that in the early days of the eighteenth century the chief supplies of coffee for England and western Europe came from the East Indies and Arabia. The Arabian, or — as it was more generally known — Turkey berry, was bought first-hand by Turkish merchants, who were accustomed to travel inland in Arabia Felix, and to contract with native growers.

It was moved thence by camel transport through Judea to Grand Cairo, *via* Suez, to be transhipped down the Nile to Alexandria, then the great shipping port for Asia and Europe. By 1722, 60,000 to 70,000 bales of Turkish (Arabian) coffee a year were being received in England, the sale price at Grand Cairo being fixed by the Bashaw, who "valorized" it according to the supply. "Indian" coffee, which was also grown in Arabia, was brought to Bettelfukere (Beit-el-fakih) in the mountains of southwestern Arabia, where English, Dutch, and French factors went to buy it and to transport it on camels to Moco (Mocha), whence it was shipped to Europe around the Cape of Good Hope.

In the beginning, "Indian" coffee was inferior to Turkish coffee; because it was the refuse, or what remained after the Turkish merchants had taken the best. But after the European merchants began to make their own purchases at Bettelfukere, the character of the "Indian" product as sold in the London and other European markets was vastly improved. Doubtless the long journey in sailing vessels over tropic seas made for better quality. It was estimated that Arabia in this way exported about a million bushels a year of "Turkish" and "Indian" coffee.

[1] Broadbent, Humphrey. *The Domestick Coffee Man.* London, 1720.
Bradley, Richard. *The vertu and use of coffee with regard to the plague and other infectious distempers.* London, 1721.

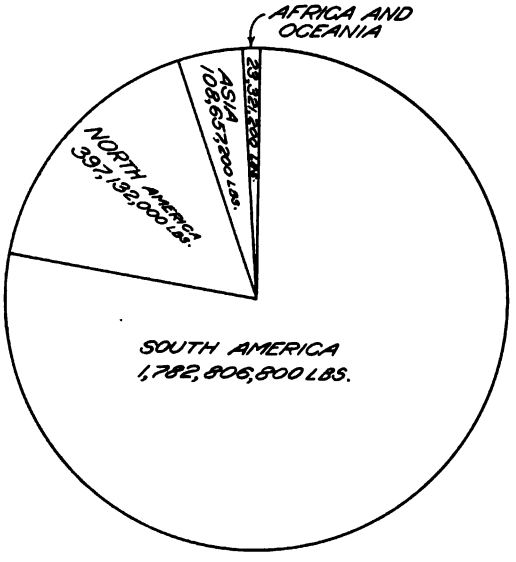
The coffee houses became the gathering places for wits, fashionable people, and brilliant and scholarly men, to whom they afforded opportunity for endless gossip and discussion. It was only natural that the lively interchange of ideas at these public clubs should generate liberal and radical opinions, and that the constituted authorities should look askance at them. Indeed the consumption of coffee has been curiously associated with movements of political protest in its whole history, at least up to the nineteenth century.

Coffee has promoted clear thinking and right living wherever introduced. It has gone hand in hand with the world's onward march toward democracy.

As already told in this work, royal orders closed the coffee houses for short periods in Constantinople and in London; Germany required a license for the sale of the beverage; the French Revolution was fomented in coffee-house meetings; and the real cradle of American liberty is said to have been a coffee house in New York. It is interesting also to note that, while the consumption of coffee has been attended by these agitations for greater liberty for three centuries, its production for three centuries, in the Dutch East Indies, in the West Indies, and in Brazil, was very largely in the hands of slaves or of forced labor.

Since the spread of the use of coffee to western Europe in the seventeenth century, the development of the trade has been marked, broadly speaking, by two features: (1) the shifting of the weight of production, first to the West Indies, then to the East Indies, and then to Brazil; and (2) the rise of the United States as the chief coffee consumer of the world. Until the close of the seventeenth century, the little district in Arabia, whence the coffee beans had first made their way to Europe, continued to supply the whole world's trade. But sprigs of coffee trees were beginning to go out from Arabia to other promising lands, both eastward and westward. As previously related, the year 1699 was an important one in the history of this expansion, as it was then that the Dutch successfully introduced the coffee plant from Arabia into Java. This started a Far Eastern industry, whose importance continues to this day, and also caused the mother country, Holland, to take up the rôle of one of the leading coffee traders of the world,

which she still holds. Holland, in fact, took to coffee from the very first. It is claimed that the first samples were introduced into that country from Mocha in 1616 — long before the beans were known in England or France — and that by 1663, regular shipments were being made. Soon after the coffee culture became firmly established in Java, regular shipments to the mother country began, the first of these

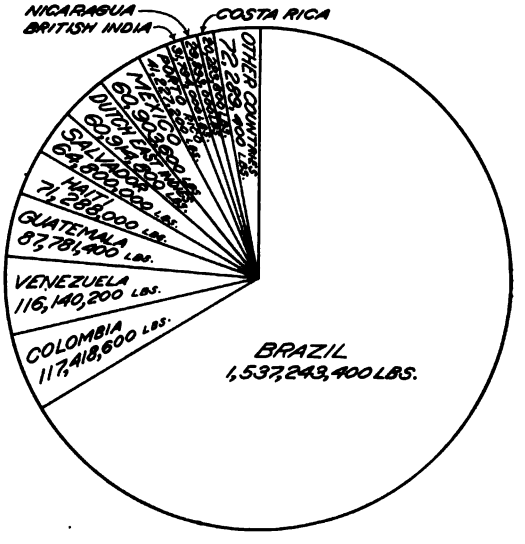


PRE-WAR AVERAGE ANNUAL PRODUCTION OF COFFEE BY CONTINENTS
Fiscal years: 1910-1914
Total pounds: 2,311,917,200

being a consignment of 894 pounds in 1711. Under the auspices of the Netherlands East India Co. the system of cultivating coffee by forced labor was begun in the East Indian colonies. It flourished until well into the nineteenth century. One result of this colonial production of coffee was to make Holland the leading coffee consumer per capita of the world, consumption in 1913, as recorded on page 290, having reached as high as 18.8 pounds. It has long been one of the leading coffee traders, importing and exporting in normal times before the war between 150,000,000 and 300,000,000 pounds a year.

The introduction of the coffee plant into the new world took place between 1715 and 1723. It quickly spread to the islands and the mainland washed by the Caribbean. The latter part of the eighteenth century saw tens of millions of pounds of coffee being shipped yearly to the mother countries of western Europe; and for decades, the two great coffee trade currents of the world continued to run from the West Indies to France, England, Holland, and Germany; and from the Dutch East Indies to Holland. These currents continued to flow until the disruption of world trade-routes by the World War; but they had been pushed into positions of secondary importance by the establishing of two new currents, running respectively from Brazil to Europe, and from Brazil to the United States, which constituted the nineteenth century's contribution to the history of the world's coffee trade.

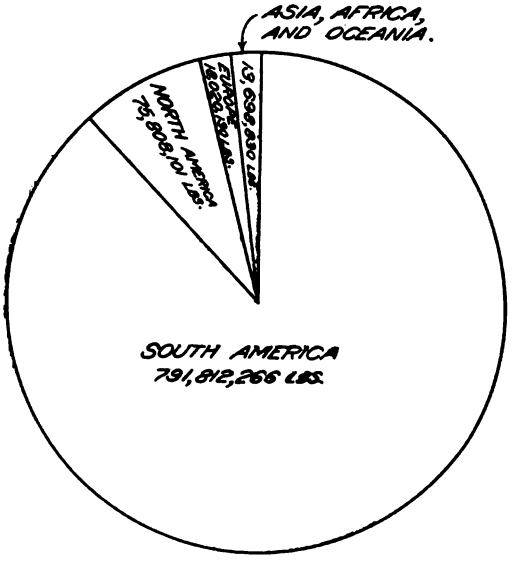
The chief feature of the twentieth century's developments has been the passing by the United States of the half-way mark in world consumption; this country, since



PRE-WAR AVERAGE ANNUAL PRODUCTION OF COFFEE BY COUNTRIES
Fiscal years: 1910-1914
Total pounds: 2,311,917,200

the second year of the World War, having taken more than all the rest of the world put together. The world's chief coffee "stream," so to speak, is now from Santos and Rio de Janeiro to New York, other lesser streams being from these ports to Havre, Antwerp, Amsterdam, and (in normal times) Hamburg; and from Java to Amsterdam and Rotterdam. It is said that a movement, fostered by Belgium and Brazil, is under way to have Antwerp succeed Hamburg as a coffee port.

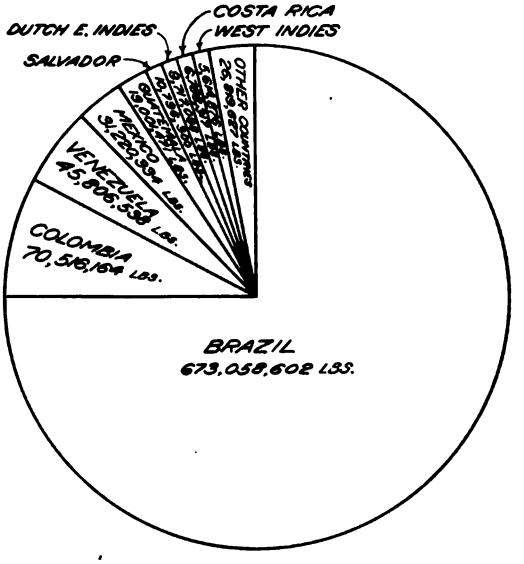
The rise of Brazil to the place of all-important source of the world's coffee was entirely a nineteenth century development. When the coffee tree found its true home in southern Brazil in 1770, it began at once to spread widely over the area of excellent soil; but there was little exportation for thirty or forty years. By the middle of the nineteenth century Brazil was contributing twice as much to the world's commerce as her nearest competitor, the Dutch East Indies, exports in 1852-53 being 2,353,563 bags from Brazil and 1,190,543 bags from the Dutch East Indies. The world's total that year was 4,567,000 bags, so that Brazilian coffee represented about one-half of the total. This proportion was roughly maintained during the latter half of the nineteenth century, but has gradu-



PRE-WAR AVERAGE ANNUAL IMPORTS OF COFFEE INTO THE UNITED STATES BY CONTINENTS
Fiscal years: 1910-1914
Total pounds: 899,339,327

ally increased since then to its present three-fourths.

The most important single event in the history of Brazilian production was the carrying out of the valorization scheme, by which the State of São Paulo, in 1906 and 1907, purchased 8,474,623 bags of coffee, and stored it in Santos, in New York, and in certain European ports, in order to stabilize the price in the face of very heavy production. At the same time, a law was passed limiting the exports to 10,000,000 bags per year. This law has since been repealed. The story of valorization is told more fully in chapter XXXI. The coffee thus purchased by the state was placed in the hands of an international committee, which fed it into the world's markets at the rate of several hundred thousand bags a year. Good prices were realized for all coffee sold; and the plan was successful, not only financially, but in the achievement



PRE-WAR AVERAGE ANNUAL IMPORTS OF COFFEE INTO THE UNITED STATES BY COUNTRIES
Fiscal years: 1910-1914
Total pounds: 899,339,327

of its main object, the prevention of the ruin of planters through overproduction.

Another valorization campaign was launched by Brazil in 1918, and a third in 1921. Early in 1918, the São Paulo government bought about 3,000,000 bags. Subsequent events caused a sharp advance in prices, and at one time it was said that the holdings showed a profit of $60,000,000. The Brazil federal government appointed an official director of valorization, Count Alexandre Siciliano. A federal loan of £9,000,000, with 4,535,000 bags of valorized coffee as collateral, was placed in London and New York in May, 1922.

European consumption during the last century has been marked by the growth of imports into France and Germany; these being the two leading coffee drinkers of the world, aside from the United States. Germany held the lead in European consumption during the whole of the nineteenth

TREND OF EUROPEAN COFFEE CONSUMPTION FOR SEVENTY YEARS

Year	*Germany* (pounds)	*France* (pounds)	*Holland* (pounds)	*Aus.-Hung.* (pounds)	*Belgium* (pounds)
1853.....	104,049,000	48,095,000	46,162,000	44,716,000	41,270,000
1863.....	146,969,000	87,524,000	30,299,000	44,966,000	39,305,000
1873.....	215,822,000	98,841,000	79,562,000	71,111,000	49,874,000
1883.....	251,706,000	150,468,000	130,380,000	74,145,000	62,846,000
1893.....	269,381,000	152,203,000	75,562,000	79,438,000	52,046,000
1903.....	403,070,000	246,122,000	78,328,000	104,200,000	51,859,000
1913.....	369,347,000	254,102,000	116,749,000	130,951,000	93,250,000

century, and also in this century until all imports were stopped by the Allied navies; although, in actual imports, Holland for many years showed higher figures. Both Holland and England have acted as distributers, re-exporting each year most of the coffee which entered their ports. In the last half-century, the chief consumers, in the order named, have been Germany, France, Holland, Austria-Hungary, and Belgium. However, with the removal of the duty on coffee in the last-named country in 1904, imports trebled; and Belgium took third place. The table at the top of this page shows the general trend of the trade for the last seventy years.

Most of the coffee for these countries has for many years been supplied by Brazil, even Holland bringing in several times as much from Brazil as from the Dutch East Indies. Special features of the European trade have been the organization, in 1873, and successful operation, in Germany, of the world's first international syndicate to control the coffee trade; and the opening of coffee exchanges in Havre in 1882, in Amsterdam and Hamburg, in 1887; in Antwerp, London, and Rotterdam, in 1890; and in Trieste in 1905.

The advance of coffee consumption in the United States, the chief coffee-consuming country in the world, has taken place through about the same period as the advance of production in Brazil, the chief producing country; but it has been far less rapid. From 1790 to 1800, coffee imports for consumption ranged from 3,500,000 to 32,000,000 pounds. The figures in the next column show the net importations of coffee into this country since the beginning of the nineteenth century.

The chief source of supply, of course, has been Brazil; and the commercial and economic ties created by this immense coffee traffic has knit the two countries closely together. Brazil is probably more friendly to the United States than any other South American country, as shown by her action in following this country into the World War against Germany. She also grants the United States certain tariff preferentials as a recognition of the continued policy of this country of admitting coffee free of duty. The chief port of entry of coffee into the United States is New York, which for decades has recorded entries amounting from sixty to ninety percent of the country's total. Since 1902, New Orleans has shown a big advance, and in 1910 imported some thirty-five percent of the total. The only other port of importance is San Francisco, where imports have been increasing in recent years because of the growth of the trade in Central American coffee.

Throughout the century and a third of steady increase of importations of coffee,

COFFEE IMPORTS, UNITED STATES, FOR 120 YEARS

Net Imports

Year	Pounds	Year	Pounds
1800[a] ...	8,792,472	1906	804,808,594
1811[a] ...	19,801,230	1907	935,678,412
1821[a] ...	11,886,063	1908	850,982,919
1830[a] ...	38,363,687	1909	1,006,975,047
1840[a] ...	86,297,761	1910	813,442,972
1850	129,791,466	1911	869,489,902
1860	182,049,527	1912	880,838,776
1870	231,173,574	1913	859,166,618
1880	440,128,838	1914	991,953,821
1890	490,161,900	1915	1,051,716,023
1900	748,800,771	1916	1,131,730,672
1901	809,036,029	1917	1,267,975,290
1902	1,056,541,637	1918	1,083,480,622
1903	867,385,063	1919	968,297,668
1904	960,878,977	1920	1,364,252,073
1905	991,160,207	1921	1,309,010,452

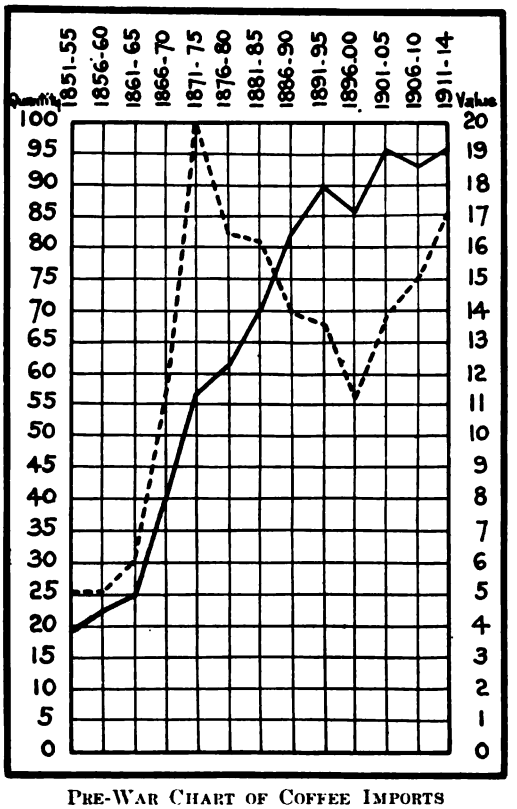
[a] Fiscal year ending Sept. 30; all other years end June 30.

Congress has for the most part permitted its free entry; as a rule, resorting to taxation of "the poor man's breakfast cup" only when in need of revenue for war purposes. At times, the free entry has been qualified; but for the most part, coffee has been free from the burden of customs tariff.

The country's coffee trade before the Civil War was without special incident; but since that time, the continued growth has brought about manipulations that have often resulted in highly dramatic crises; organizations to exercise some sort of regulation in the trade; the development of a trade in substitutes; the advance of the sale of branded package coffee; the institution of large advertising campaigns; and other interesting features. These are treated more in detail in chapters that follow.

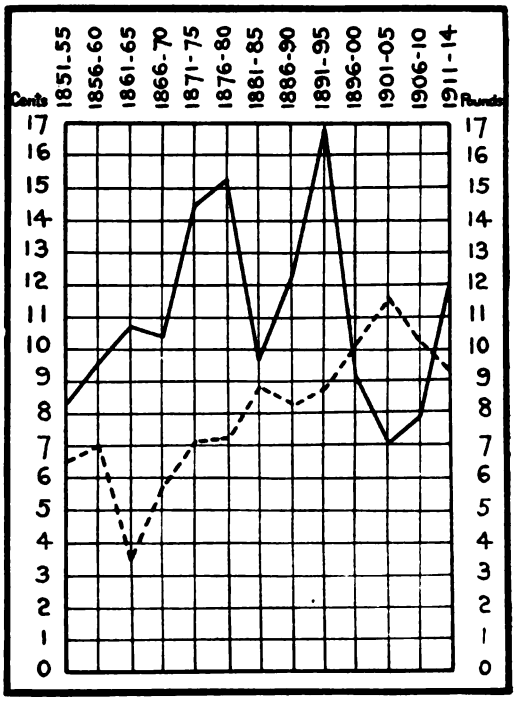
Coffee Drinking in the United States

Is the United States using more coffee than formerly, allowing for the increase in population? Of course there are sporadic increases, in particular years and groups of years, and they may indicate to the casual observer that our coffee drinking is mounting rapidly. And then there is the steadily growing import figure, double what it was within the memory of a man still young.



PRE-WAR CHART OF COFFEE IMPORTS

Quantity and value of net imports of coffee into the United States for the fiscal years 1851 to 1914 in five-year averages. Solid line represents quantity, figures in million pounds on left side. Dotted line represents value, figures in million dollars on right side



PRE-WAR CONSUMPTION AND PRICE CHART

Import price and per capita consumption of coffee in the United States for the fiscal years 1851 to 1914, in five-year averages. Solid line represents import price per pound. Dotted line represents per capita consumption

But the apparent growth in any given year is a matter of comparison with a nearby year, and there are declines as well as jumps; and, as for the gradual growth, it must always be remembered that, according to the Census Bureau, some 1,400,000 more people are born into this country every year, or enter its ports, than are removed by death or emigration. At the present rate this increase would account for about 17,000,000 pounds more coffee each year than was consumed in the year before.

The question is: Do Mr. Citizen, or Mrs. Citizen, or the little Citizens growing up into the coffee-drinking age, pass his or her or their respective cups along for a second pouring where they used to be satisfied with one, or do they take a cup in the evening as well as in the morning, or do they perhaps have it served to them at an afternoon reception where they used to get something else? In other words, is the coffee habit becoming more intensive as well as more extensive?

There are plenty of very good reasons why it should have become so in the last

twenty-five or thirty years; for the improvements in distributing, packing, and preparing coffee have been many and notable. It is a far cry these days from the times when the housewife snatched a couple of minutes amid a hundred other kitchen duties to set a pan over the fire to roast a handful of green coffee beans, and then took two or three more minutes to pound or grind the crudely roasted product into coarse granules for boiling.

For a good many years, the keenest wits of the coffee merchants, not only of the United States but of Europe as well, have been at work to refine the beverage as it comes to the consumer's cup; and their success has been striking. Now the consumer can have his favorite brand not only roasted but packed air-tight to preserve its flavor; and made up, moreover, of growths brought from the four corners of the earth and blended to suit the most exacting taste. He can buy it already ground, or he can have it in the form of a soluble powder; he can even get it with the caffein element ninety-nine percent removed. It is preserved for his use in paper or tin or fiber boxes, with wrappings whose attractive designs seem to add something in themselves to the quality. Instead of the old coffee pot, black with long service, he has modern shining percolators and filtration devices; with a new one coming out every little while, to challenge even these. Last but not least, he is being educated to make it properly — tuition free.

It would be surprising, with these and dozens of other refinements, if a far better average cup of coffee were not produced than was served forty years ago, and if the coffee drinker did not show his appreciation by coming back for more.

As a matter of fact, the figures show that he does come back for more. We do not refer to the figures of the last two years, which indeed are higher than those for many preceding years, but to the only averages that are of much significance in this connection; namely, those for periods of years going back half a century or more. Five-year averages back to the Civil War show increasing per capita consumption for continental United States (see table).

It will be seen that the gain has been a decided one, fairly steady, but not exactly uniform. In the fifty years, John Doe has not quite come to the point where he hands

FIVE-YEAR PER CAPITA CONSUMPTION FIGURES

Five-year Period	*Per capita Pounds*	*Five-year Period*	*Per capita Pounds*
1867 - 71	6.38	1897 - 1901	10.52
1872 - 76	7.03	1902 - 06	11.50
1877 - 81	7.53	1907 - 11	10.21
1882 - 86	9.09	1912 - 16	10.02
1887 - 91	8.07	1917 - 21	11.39
1892 - 96	8.63		

up his cup for a second helping and keeps a meaningful silence. Instead, he stipulates, "Don't fill it quite full; fill it about five-sixths as full as it was before." That is a substantial gain, and one that the next fifty years can hardly be expected to duplicate, in spite of the efforts of our coffee advertisers, our inventors, and our vigorous importers and roasters.

The most striking feature of this fifty-year growth was the big step upward in 1897, when the per capita rose two pounds over the year before and established an average that has been pretty well maintained since. Something of the sort may have taken place again in 1920, when there was a three-pound jump over the year before. It will be interesting to see whether this is merely a jump or a permanent rise; whether our coffee trade has climbed to a hilltop or a plateau.

In this connection it should be noted that the government's per capita coffee figures apply only to continental United States, and that in computing them all the various items of trade of the noncontiguous possessions (not counting the Philippines, whose statistics are kept entirely separate from those of the United States proper) are carefully taken into account.

But for the benefit of students of coffee figures it should be added that this method does not result in a final figure except for one year in ten. The reason is that between censuses the population of the country is determined only by estimates; and these estimates (by the U. S. Bureau of the Census) are based on the average increase in the preceding census decade. The increase between 1910 and 1920, for instance, is divided by 120, the number of months in the period, and this average monthly increase is assumed to be the same as that of the current year and of other years following 1920. Until new figures are obtained in 1930, the monthly increase will continue to be estimated at the same rate as the increase from 1910 to 1920, or about 118,-

000. This figure will be used in computing the per capita coffee consumption. But when the 1930 figures are in, it may be found that the estimates were too low or too high, and the per capita figures for all intervening years will accordingly be subject to revision. This will not amount to much, probably five-hundredths of a pound at most; but it is evident that between 1920 and 1930 all per capita consumption figures issued by the government are to be considered as provisional to that extent at least.

In the 1920 *Statistical Abstract* the government has revised its per capita coffee and tea figures to conform to actual instead of estimated population figures between 1910 and 1920, with the result that these figures are slightly different from those published in previous editions of the *Abstract*. Figures from 1890 to 1910 have also been slightly changed, as they were originally computed by using population figures as of June 1, whereas it is desirable to have computations based on July 1 estimates to make them conform to present per capita figures.

Reviewing the 1921 Trade in the United States

According to the latest available foreign trade summaries issued by the government, the United States bought more coffee in 1921 than in any previous calendar year of our history, although the total imports did not quite reach the highest fiscal-year mark. Our purchases passed the 1920 mark by more than 40,000,000 pounds and were higher than those of two years ago by 3,500,000 pounds.

But this record was made only in actual amounts shipped, as the value of imported coffee was far below that of immediately preceding years. Coffee values, however, fell off less than the average values for all imports, the decrease for coffee being forty-three percent and for the country's total imports fifty-two percent.

Exports of coffee were somewhat less in quantity than in 1920, and about the same as in 1919; although the value, like that of imports, was considerably less than in either previous year.

Re-exports of foreign coffee were considerably below the 1920 mark, in both quantity and value, and indeed were less than in several years. The amount of tea re-exported to foreign countries was only about half that shipped out in 1920, showing a continuation of the tendency of the United States to discontinue its services as a middleman, which raised the through traffic in tea several million pounds during the dislocation of shipping.

Actual figures of amounts and values of gross coffee imports for the three calendar years, 1919-1921, have been as follows:

	Pounds	*Value*
1921	1,340,979,776	$142,808,719
1920	1,297,439,310	252,450,651
1919	1,337,564,067	261,270,106

This represents a gain of three and three-tenths percent over 1920 in quantity and of only about one-fifth of one percent over 1919. The decrease in value in 1921 was forty-three percent from the figures for 1920 and forty-five percent from those of 1919.

Domestic exports of coffee, mostly from Hawaii and Porto Rico, amounted to 34,572,967 pounds valued at $5,895,606, as compared with 36,757,443 pounds valued at $9,803,574 in the calendar year 1920, or a decrease of six percent in quantity and forty percent in value. In 1919 domestic exports were 34,351,554 pounds, having a value of $8,816,581, practically the same in quantity, but showing a falling off of thirty-three percent in value.

Re-exports of foreign coffee amounted to 36,804,684 pounds in 1921, having a value of $3,911,847, a decline of twenty-five percent from the 49,144,691 pounds of 1920 and of fifty-four percent from the 81,129,691 pounds of 1919; whereas in point of value there was a decrease of fifty-six percent from 1920, which was $9,037,882, and of eighty-eight percent from that of 1919, which was $16,815,468.

The average value per pound of the imported coffee, according to these figures, works out at little more than half that of either 1920 or 1919, illustrating the precipitate drop of prices when the depression came on. The pound value in 1921 was 10.6c.; for 1920, 19.4c.; and for 1919, 19.5c. These values are derived from the valuations placed on shipments at the point of export, the "foreign valuation" for which the much discussed "American valuation" is proposed as a substitute. They, accordingly do not take into account costs of freight, insurance, etc.

It is interesting to note that the average valuation of 10.6c. a pound for coffee

shipped during the calendar year is a substantial drop from the 13.12c. a pound that was the average for the fiscal year 1921, showing that the decline in values continued during the last half of the calendar year.

Coffee imports in 1921 continued to run in about the same well-worn channels as in previous years, according to the figures showing the trade with the producing countries. The United States, as heretofore, drew almost its whole supply from its neighbors on this side of the globe; the countries to the south furnishing ninety-seven percent of the total entering our ports. The three chief countries of South America contributed eighty-five percent; and the share of Brazil alone was sixty-two and five-tenths percent.

Brazil's progress to her normal pre-war position in our coffee trade is rather slow, although she continues to show a gain in percentage each year. Formerly we obtained seventy percent to seventy-five percent of our coffee from that country; but war conditions, diverting nearly all of Central America's production to our ports, reduced the proportion to almost half. In 1919 this had risen to fifty-nine per cent, in 1920 it was somewhat over sixty percent, and in 1921 it attained a mark of sixty-two and five-tenths percent. The actual amount shipped, which was 839,212,388 pounds having a value of $77,186,271, was about seven percent higher than in 1920, which was 785,810,689 pounds valued at $148,793,593; and about the same percent higher than that of 1919 — 787,312,293 pounds valued at $160,038,196. Although the actual poundage showed an increase, it will be noted that the value fell off almost one-half as compared with 1920, and more than one-half as compared with the year before.

The real feature of the year, and perhaps the most interesting development in the coffee trade of this country in recent years, is the steady advance of Colombian coffee.

In the year before the war, we obtained from our nearest South American neighbor 87,176,477 pounds of coffee valued at $11,381,675, which was about ten percent of our total imports. In 1919, the first year after the war, this amount was almost doubled, being 150,483,853 pounds with a value of $30,425,162. In 1920, there was a further increase to 194,682,616 pounds valued at $41,557,669, and in 1921 the high mark of 249,123,356 pounds valued at $37,322,305 was reached. This was a gain of twenty-eight percent over 1920 shipments; and, although the value was less than in the year before, the decrease was only ten percent in a year when the average fall in value was forty-three percent.

It will be news to many people interested in the coffee trade that the value of Colombian coffee now imported into the United States is almost half the value of the Brazilian coffee — $37,000,000 as compared with $77,000,000. The number of pounds imported is a little less than one-third the Brazilian contribution; but at the present rate of increase, it will pass the half mark in a few years.

Colombia and Venezuela together now supply considerably more than half as much coffee as Brazil in value, and more than one-third as much in quantity. The average value of Colombian coffee in 1921 was about fifteen cents a pound, as compared with eleven cents for Venezuelan, nine cents for Brazilian, ten cents for Central American, and ten and six-tenths cents for total coffee imports.

Shipments from Venezuela showed a drop in quantity of nine percent as compared with 1920 imports, being 59,783,303 pounds valued at $6,798,709; in 1920 they were 65,970,954 pounds valued at $13,802,995; and in 1919, they were 109,777,831 pounds valued at $23,163,071.

The figures relating to imports from Central America are of interest as showing to what extent we are continuing to hold the trade of the war years, when nearly all coffee shipped from that region came to the United States. Although there has probably been a considerable swing back to the trade with Europe, the 1921 figures show that a large percent of the trade that this country gained during the war is being retained. Imports in 1921 were considerably lower than in 1920 or in 1919, but were still more than three times as heavy as in 1913, the last year of normal trade.

The displacement of Central America's trade by the war, and the extent to which it has so far returned to old channels, are illustrated in the table of Imports into the United States from Central America in the last nine years on page 301.

As Germany was very prominent in pre-war trade, it is likely that more and more coffee will be diverted from the United

IMPORTS INTO THE UNITED STATES FROM CENTRAL AMERICA

Year	*Pounds*	*Value*
1913	36,326,440	$4,635,359
1914	44,896,856	5,465,893
1915	71,361,288	8,093,532
1916	111,259,125	12,775,921
1917	148,031,640	15,751,761
1918	195,259,628	19,234,198
1919	131,638,695	19,375,179
1920	159,204,341	30,388,567
1921	118,607,382	12,308,250

States as German imports gradually increase to their old level.

Imports from Mexico in 1921 were greater by thirty-eight percent than in 1920, but were less than in 1919, and were still much below the normal trade before the war. The total was 26,895,034 pounds having a value of $3,475,122, as compared with 19,519,865 pounds valued at $3,873,217 in the year before, and with 29,567,469 pounds valued at $5,434,884 in 1919. The imports in 1913 were more than 40,000,000 pounds, in 1914 more than 43,000,000 pounds, and in 1915 more than 52,000,000 pounds.

West Indian coffees showed a gradual settling back to pre-war figures, which ranged from 3,000,000 to 12,000,000 pounds annually, but which in 1918, the last year of the war, leaped to 52,000,000 pounds. In 1919 they amounted to 42,013,841 pounds valued at $7,575,051; and in 1920, fell to 29,204,674 pounds valued at $5,711,993. In 1921 they continued to drop, the total being 15,398,073 pounds valued at $1,518,784, a decrease of forty-seven and three-tenths percent in quantity.

The year under review showed practically a return to normal for importations from Aden, which up to 1917 ran about 3,000,000 pounds a year. In that year the full effects of the war were felt in the Aden district, and shipments of coffee to this country dropped to 187,817 pounds. They rose to 432,000 pounds in 1918; and in 1919, to 681,290 pounds valued at $141,391. In 1920 there was a further rise to 889,633 pounds valued at $200,505; and in 1921 they amounted to 2,799,824 pounds valued at $476,672. But this trade is of little importance compared with that of the producing countries of this hemisphere, being less than one percent of our total imports.

Imports from the Dutch East Indies continued to decline, being fifty-five percent less than in 1920. The total of 12,438,016 pounds, however, valued at $1,771,602, is still two or three times the normal pre-war importations.

Exports of coffee in 1921 — 33,389,805 pounds of green coffee valued at $5,590,318 and 1,183,162 pounds of roasted valued at $305,288 — were about the same as those of the year before in quantity, although much lower in value. The 1920 shipments were 34,785,574 pounds valued at $9,223,966 of green coffee and 1,971,869 pounds of roasted valued at $579,608.

In the re-export trade, shipments of coffee were lower than in several years, total amounts for 1921, 1920, and 1919 being 36,804,684 pounds, 49,144,091 pounds, and 81,129,641 pounds, and total values $3,911,847, $9,037,882, and $16,815,468.

Re-exports to France fell off from 16,760,977 pounds in 1920 to 11,429,952 in 1921. Mexico took 3,236,245 pounds as compared with 9,892,639 in the previous year, and Cuba also reduced her purchases from 6,319,105 pounds to 2,831,109. Ship-

PERCENTAGE OF TOTAL COFFEE IMPORTS INTO UNITED STATES

From	1919		1920		1921		*Percentage of increase (+) or decrease (—) of 1921 imports compared with 1920.*	
	Quantity	*Value*	*Quantity*	*Value*	*Quantity*	*Value*	*Quantity*	*Value*
Central America	9.80	7.40	12.30	12.00	8.80	8.60	— 25.50	— 50.00
Mexico	2.20	2.10	1.50	1.50	2.00	2.40	+ 37.80	— 10.30
West Indies	3.10	2.90	2.20	2.20	1.10	1.00	— 47.30	— 73.40
Brazil	58.80	61.30	60.50	58.90	62.50	54.00	+ 6.80	— 48.10
Colombia	11.20	11.60	15.00	16.40	18.50	26.10	+ 28.00	— 10.20
Venezuela	8.20	8.90	5.10	5.10	4.40	4.80	— 9.30	— 50.70
Aden	0.05	0.05	0.07	0.08	0.20	0.30	+214.80	+137.70
Dutch East Indies	4.20	3.80	2.10	2.00	0.90	1.20	— 55.70	— 65.40
Other countries	2.45	1.95	1.23	1.52	1.60	1.60	.....	.....
Total	100.00	100.00	100.00	100.00	100.00	100.00	+ 3.40	— 43.40

ments to Denmark, 4,099,403 pounds, were practically the same as in 1920, 3,951,166 pounds, as were also those to Germany, 3,200,158 pounds as compared with 2,917,773 in 1920.

In the trade of the two coffee-exporting possessions of the United States, Hawaii and Porto Rico, the 1921 figures show a considerable increase in shipments from Hawaii to continental United States and to foreign countries, while exports from Porto Rico fell off slightly.

Hawaii in 1921 sent 803,905 pounds valued at $123,347 to foreign countries, which compared with 687,597 pounds valued at $200,180 in the year before, and 4,183,046 valued at $650,036 to continental United States, as against 1,885,703 pounds valued at $476,033 in the previous year.

Porto Rico's crop, as usual, furnished the bulk of the domestic exports of the United States to foreign countries — 29,546,348 pounds valued at $5,027,741, as against 1920 exports of 31,321,415 pounds valued at $8,455,908. Shipments from Porto Rico to continental United States amounted to 211,531 pounds valued at $35,780, as against 418,127 pounds valued at $118,663 in 1920.

Following are the figures of re-exports of coffee by countries in the calendar year 1921:

RE-EXPORTS OF COFFEE FROM UNITED STATES, 1921

Country	*Pounds*
Belgium	2,717,949
Denmark	4,099,403
France	11,429,952
Germany	3,200,158
Greece	539,933
Netherlands	920,855
Norway	237,155
Sweden	1,935,641
Canada	1,037,628
Mexico	3,236,245
Cuba	2,831,109
Other Countries	4,618,656
Total	36,804,684

Per capita consumption of coffee in continental United States showed a slight increase during the calendar year 1921 over that of 1920, the figure being 12.09 pounds as against 11.70 for the previous year. This calendar-year figure compares with the fiscal-year figure of 12.21 pounds, indicating that imports during the last half of 1920 were somewhat heavier than during the last half of 1921.

The various items for the two calendar years 1920 and 1921 are shown as follows:

	1921 *Calendar year, (pounds)*	1920 *Calendar year, (pounds)*
(a) Total imports into U. S.	1,340,979,776	1,297,439,310
(b) Imports into non-contiguous territory from foreign countries	7,410	27
(c) (a) minus (b)	1,340,972,366	1,297,439,283
(d) Total exports from U. S.	34,572,967	36,757,443
(e) Exports from non-contiguous territory to foreign countries	30,363,098	32,028,832
(f) (d) minus (e)	4,209,869	4,728,611
(g) Total re-exports from U. S.	36,804,684	49,144,691
(h) Re-exports from non-contiguous territory to foreign countries	.....	20,008
(i) (g) minus (h)	36,804,684	49,124,683
(j) Imports into continental U. S. from non-contiguous territory	4,394,577	2,303,830
(k) Exports to non-contiguous territory from continental U. S.	798,644	972,303
(l) (j) minus (k)	3,595,933	1,331,527
Net consumption, continental U. S.: (c) minus (f) minus (i) plus (l)	1,303,553,746	1,244,917,516
Population, July 1	107,833,279	106,418,170
Per capita consumption, 1921	12.09	11.70

Chapter XXIII

HOW GREEN COFFEES ARE BOUGHT AND SOLD

Buying coffee in the producing countries — Transporting coffee to the consuming markets — Some record coffee cargoes shipped to the United States — Transport over seas — Java coffee "ex-sailing vessels" — Handling coffee at New York, New Orleans, and San Francisco — The coffee exchanges of Europe and the United States — Commission men and brokers — Trade and exchange contracts for delivery — Important rulings affecting coffee trading — Some well known green coffee marks

IN moving green coffee from the plantations to the consuming countries, the shipments pass through much the same trade channels as other foreign-grown food products. In general, the coffee goes from planter to trader in the shipping ports; thence to the exporter, who sells it to an importer in the consuming country; he in turn passing it on to a roaster, to be prepared for consumption. The system varies in some respects in the different countries, according to the development of economic and transportation methods; but, broadly considered, this is the general method.

Buying Coffee in the Producing Countries

The marketing of coffee begins when the berries are swept up from the drying patios, put in gunny sacks, and sent to the ports of export to be sampled and shipped. In Brazil, four-wheeled wagons drawn by six mules, or two-wheeled carts carry it to the nearest railroad or river.

Brazil, as the world's largest producer of coffee, has the most highly developed buying system. Coffee cultivation has been the chief agricultural pursuit in that country for many years; and large amounts of government and private capital have been invested in growing, transportation, storage, and ship-loading facilities, particularly in the state of São Paulo.

The usual method in Brazil is for the *fazendeiro* (coffee-grower) or the *commisario* (commission merchant) to load his shipments of coffee at an interior railroad station. If his consignee is in Santos, he generally deposits the bill of lading with a bank and draws a draft, usually payable after thirty days, against the consignee. When the consignee accepts the draft, he receives the bill of lading, and is then permitted to put the coffee in a warehouse.

Storing at Santos

At Santos most of the storing is done in the steel warehouses of the City Dock Company, a private corporation whose warehouses extend for three miles along the waterfront at one end of the town. Railroad switches lead to these warehouses, so that the coffee is brought to storage in the same cars in which it was originally loaded up-country. The warehouses are leased by *commisarios*. There are also many old warehouses, built of wood, still operated in Santos, and to these the coffee is transferred from the railroad station either by mule carts or by automobile trucks.

At the receiving warehouses, samples of each bag are taken; the tester, or sampler, standing at the door with a sharp tool, resembling a cheese-tester, which he thrusts

THE LAST SAMPLE BEFORE EXPORT, SANTOS

into the center of the bag as the men pass him with the bags of coffee on their heads, removing a double handful of the contents. The samples are divided into two parts; one for the seller, and one that the *commisario* retains until he has sold the consignment of coffee covered by that particular lot of samples.

The Disappearing Ensaccador

In the old days it was the custom every morning for the *ensaccadores,* or baggers, and the exporters or their brokers, to visit the *commisarios'* warehouses and to bargain for lots of coffee made up by the *commisario.*

In the Santos market, until recent years, the *ensaccador,* or coffee-bagger, often stood between the *commisario* and exporter. When American importing houses began to establish their own buying offices in the Brazilian ports (about 1910) to deal direct with the *fazendeiro* and the *commisario,* the gradual elimination of the *ensaccador* was begun. Today he has entirely disappeared from the Santos market, and is disappearing from Rio de Janeiro, Bahia, and Victoria.

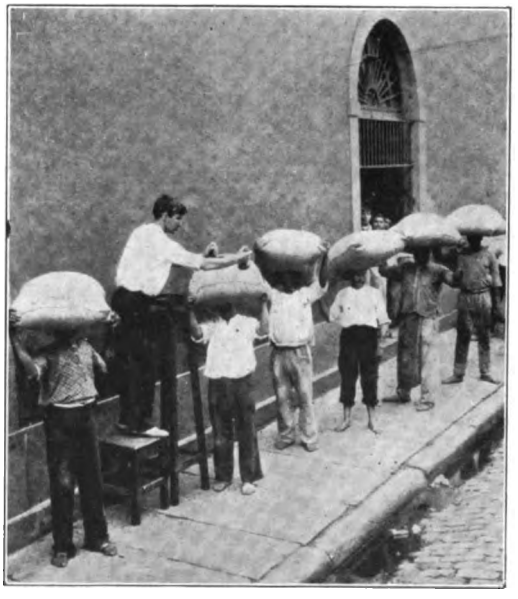
Coffee reaches Santos in a mixed condition; that is, it has not been graded, or separated according to its various qualities. This is the work of the *commisario,* who puts each shipment into "lots" in new "official" bags, each of which bears a mark stating that the contents are São Paulo growth. If the coffee is offered for sale by the owner, the *commisario* will then put it on the "street," the section of Santos given over to coffee trading.

The *commisario* works with samples of the coffee he has to offer and only puts out one set at a time. He names his "asking" price, known locally as the *pedido,* which is the maximum rate he expects to get, but seldom receives. A set of samples may be shown to twenty-five or thirty exporting houses in a day, one at a time. When the sample is in the hands of a firm for consideration, no other exporter has the right to buy the lot even at the *pedido* price, and the *commisario* can not accept other offers until he has refused the bid. On the other hand, if a house refuses to give up the samples, it is understood that it is willing to pay the *pedido* price. The firm first offering a price acceptable to the *commisario's* broker gets the lot, even though other houses have offered the same price.

When a lot is sold, the samples are turned over to the successful bidder, and he then asks the *commisario* for larger samples for comparison with the first set.

Commisarios Make as High as Nine Percent

Having sold the coffee of a given planter, the *commisario* often gets as much as nine percent for his share of the transaction.



STAMPING BAGS FOR EXPORT, SANTOS

COFFEE FROM THE FAZENDAS IS DELIVERED AT THE COMMISSARIOS' WAREHOUSES IN RIO

INTERIOR OF A SANTOS CLEANING AND GRADING WAREHOUSE

PREPARING BRAZIL COFFEE FOR EXPORT

GRADING COFFEE AT SANTOS

Unless the bags have been furnished to the planter at a good rental, the coffee must be transferred to the *commisario's* bags; and for this the planter pays a commission.

Formerly the coffee, being rebagged by the *ensaccador,* was manipulated in what is called *ligas;* that is, mixing several neutral grades from various lots to create an artificial grade; or, more properly speaking, a "type," desirable for trading on the New York market.

Grading and Testing in Brazil

Having bought a lot of coffee, the exporter's next step is to grade and to test it. Grading is generally done in the morning and late afternoon, the hours from one to half-past four being devoted to making offers. The afternoon grading is done by sight. The morning examinations are more thorough, some progressive exporting houses even cup-testing the samples. Samples are compared with house standards, and with the requirements that have been cabled from the home office in the consuming country. Some of the coffee is roasted to obtain a standard by which all "chops" (varieties) are then graded and marked according to quality — fine, good, fair, or poor. Quality is further classified by the numerals from two to eight, which standards have been established on the New York Coffee and Sugar Exchange, and are described farther on in this chapter. Some traders also use the terms large or small bean; fair, good, or poor roasters; soft or hard bean; light or dark; and similar descriptive terms.

When a lot is ready for shipment overseas, the *commisario* stamps each bag with his identifying mark, to which the buyer or exporter adds his brand. If the *commisario* is ordered before eleven in the morning to ship a lot of coffee, he must be paid before three in the afternoon of the same day; if he receives the order after eleven, payment need not be made before three in the afternoon of the following day. Generally the terms of sale are full settlement in thirty days, less discount at the rate of six percent per annum for the unexpired time, if paid before the period of grace is up.

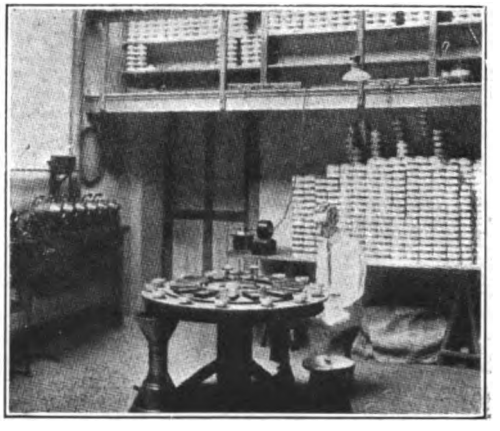
Dispatching and Capitazias

The exporter collects his money by drawing a draft against his client on deposit of bill of lading, cashing the draft through an exchange broker who deducts his brokerage fee. The exporter must obtain a consular invoice, a shipping permit from both federal and state authorities, and pay an export tax, before the coffee goes aboard the ship. This process is known as "dispatching," while the dock company's charges are known as *capitazias.*

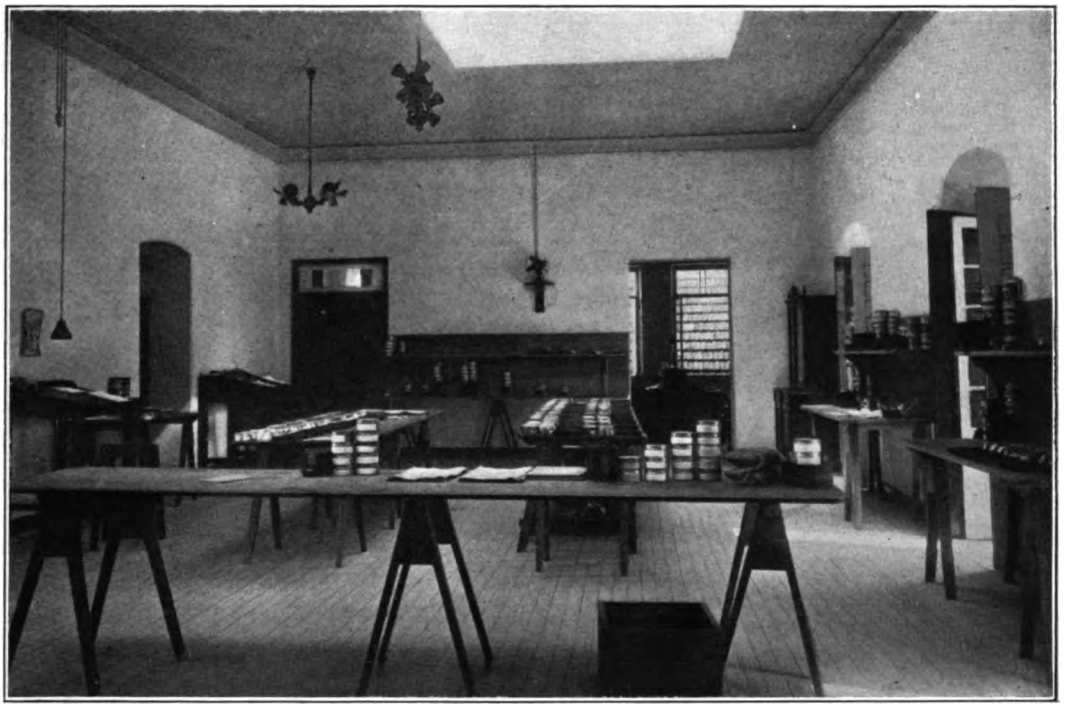
In practically all coffee-growing sections the small planter is helped financially by the owners of processing plants or by the exporting firms. The larger planters may even obtain advances on their crops from the importing houses in New York, Havre, Hamburg, or other foreign centers.

The Exchange at Santos

A new coffee exchange began business at Santos on May 1, 1917, sitting with the Coffee Brokers Board of Control. This



THE TEST BY CUPS, SANTOS



WHERE COFFEES ARE SIGHT-GRADED BEFORE BEING SUBMITTED TO CUP TESTS

HAND & RAND BUILDING: FIRST FLOOR, STORAGE; SECOND FLOOR, OFFICES

NEW YORK COFFEE IMPORTERS' MODEL ESTABLISHMENT AT SANTOS

PACK-MULE TRANSPORT IN VENEZUELA

Board consists of five coffee brokers, four elected annually at a general meeting of the brokers of Santos, and one chosen annually by the president of the state of São Paulo. Among the duties of the Board are the classification and valuation of coffee, adjustment of differences, etc.

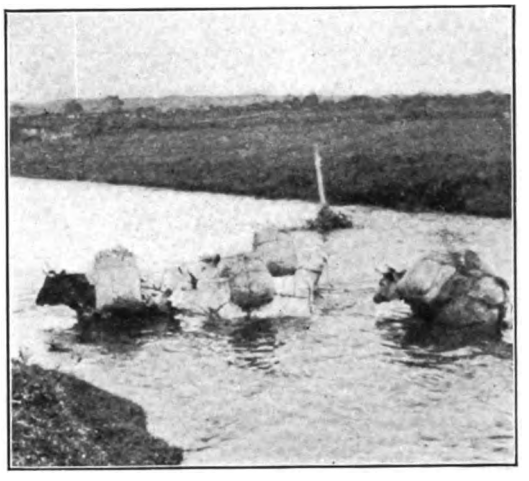
Transporting Coffee to Points of Export

Transportation methods from plantation to shipside naturally vary with local topographical and economic conditions. In Venezuela, the bulk of the coffee is transported by pack-mule from the plantations and shipping towns to the head of the railroad system, and thence by rail to the Catatumbo River, where it is carried in small steamers down the river and across Lake Maracaibo to the city of Maracaibo. In Colombia, coffee is sent down the Magdalena River aboard small steamers direct to the seaboard. In Central America, transportation is one of the most serious problems facing the grower. The roads are poor, and in the rainy season are sometimes deep with mud; so much so that it may require a week to drive a wagon-load of coffee to the railroad or the river shipping point.

COFFEE-CARRYING CART, GUATEMALA

Buying Coffee in Abyssinia

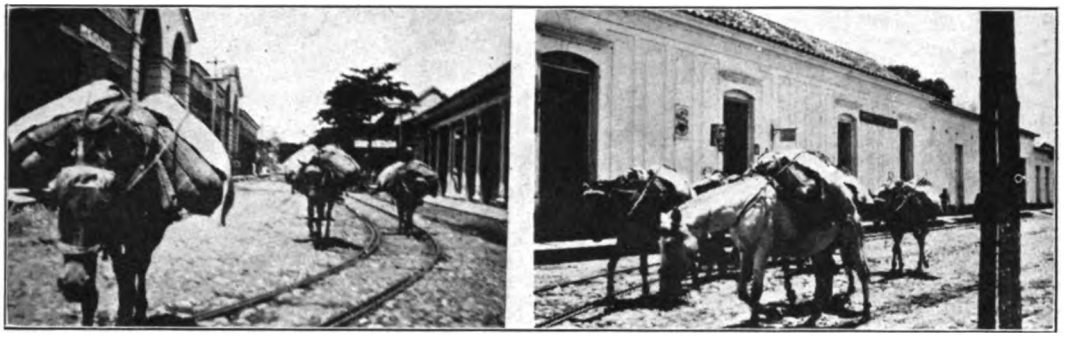
Coffee is generally grown in Abyssinia by small farmers, who mostly finance themselves and sell the crop to native brokers, who in turn sell it to representatives of foreign houses in the larger trading centers. Trading methods between farmer and broker are not much more than the old system of barter. In the southwestern section, where the Abyssinian coffee grows wild, transport to the nearest trading center is by mule train, and not infrequently by camel back. In the Harar district, the women of the farmers living near Harar, the market center, carry the coffee in long shallow baskets on their heads to the native brokers. In the more remote places the coffee farmer waits for the broker to call on him. From the town of Harar the coffee is transported by mule or camel train to Dire-Daoua, whence it is shipped by rail to Jibuti, to be sent by direct steamers to Europe, or across the Gulf of Aden to Aden in Arabia.



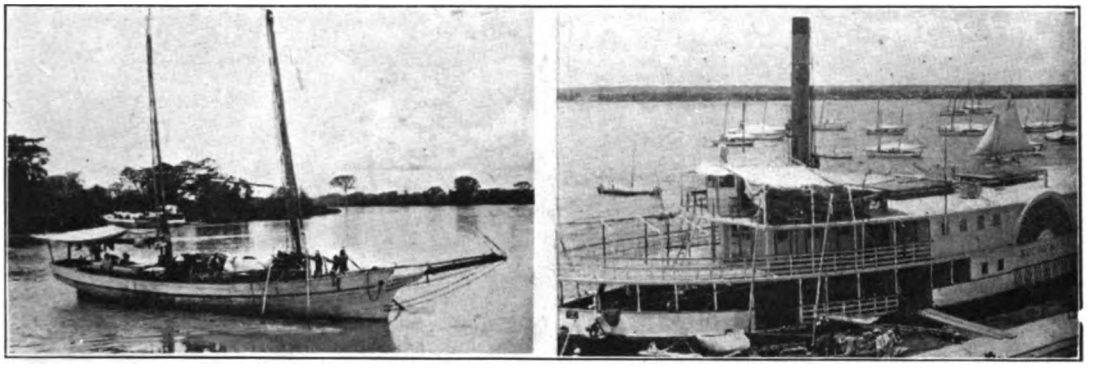
COFFEE-LADEN OXEN FORDING STREAM, COLOMBIA

Ten different languages are spoken in Harar. In order successfully to engage in the coffee business there, it is necessary either to become proficient in all these tongues, or to engage some one who is.

When the coffee is brought, partially cleaned, into Harar by donkey or mule

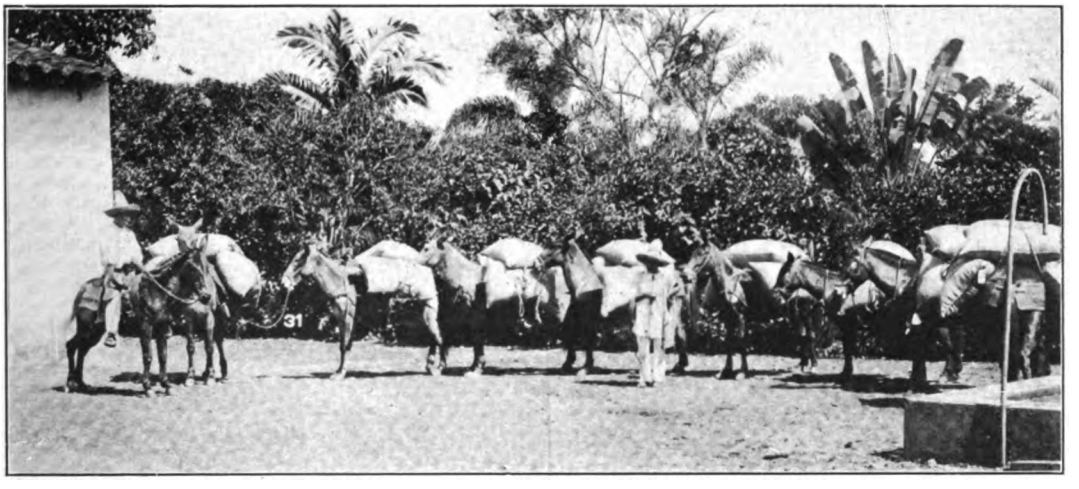


TRANSPORTING COFFEE BY MULEBACK IN THE CITY OF CUCUTA, COLOMBIA



Schooner from Encontrados to Maracaibo — One of the lake and river steamers

COFFEE CARGO CARRIERS THAT OPERATE ON LAKE MARACAIBO AND TRIBUTARY RIVERS



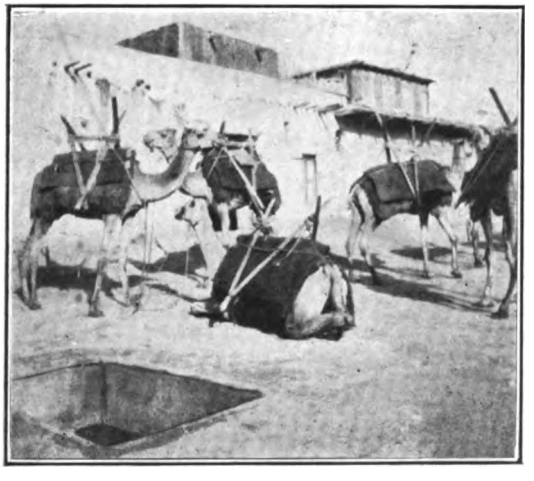
DONKEY TRANSPORT TRAIN FOR COFFEE IN MEXICO

COFFEE TRANSPORT IN MEXICO AND SOUTH AMERICA

DONKEY COFFEE TRANSPORT ON THE WAY FROM HARAR TO DIRE-DAOUA

train, it is first taken to the open air custom-house (coffee exchange) in the center of the town, where a ten-percent duty (in coffee) is exacted by the local government, and one Abyssinian dollar (fifty cents) is added for every thirty-seven and a half pounds, this latter being Ras Makonnen's share. As soon as the native dealer has released to him what remains of his shipment, he takes it out of the custom-house enclosure and disposes of it through the native brokers, who have their little "office" booths stretching in a long line up the street just outside the custom-house entrance.

There, a brokerage charge of one piaster per bag is paid by the buyer, and the coffee then becomes the property of the European merchant. In some cases it is put through a further cleaning process; but usually it is shipped to Jibuti or Aden uncleaned.



COFFEE CAMELS IN THE CUSTOM-HOUSE, HARAR

Arriving at Jibuti, there is a one-percent ad valorem duty to pay. At Aden, there is another tax of one anna (two cents) to be paid to the British authorities.

Since 1914, however, Abyssinian coffee has been exported largely through the Sudan, a much shorter and less expensive trip than that to Adis Abeba and Jibuti. Now the coffee is carried by pack-train to Gambela on the Sobat River; and thence by river steamer to Khartoum, where it is loaded on railroad trains and sent to Port Sudan on the Red Sea.

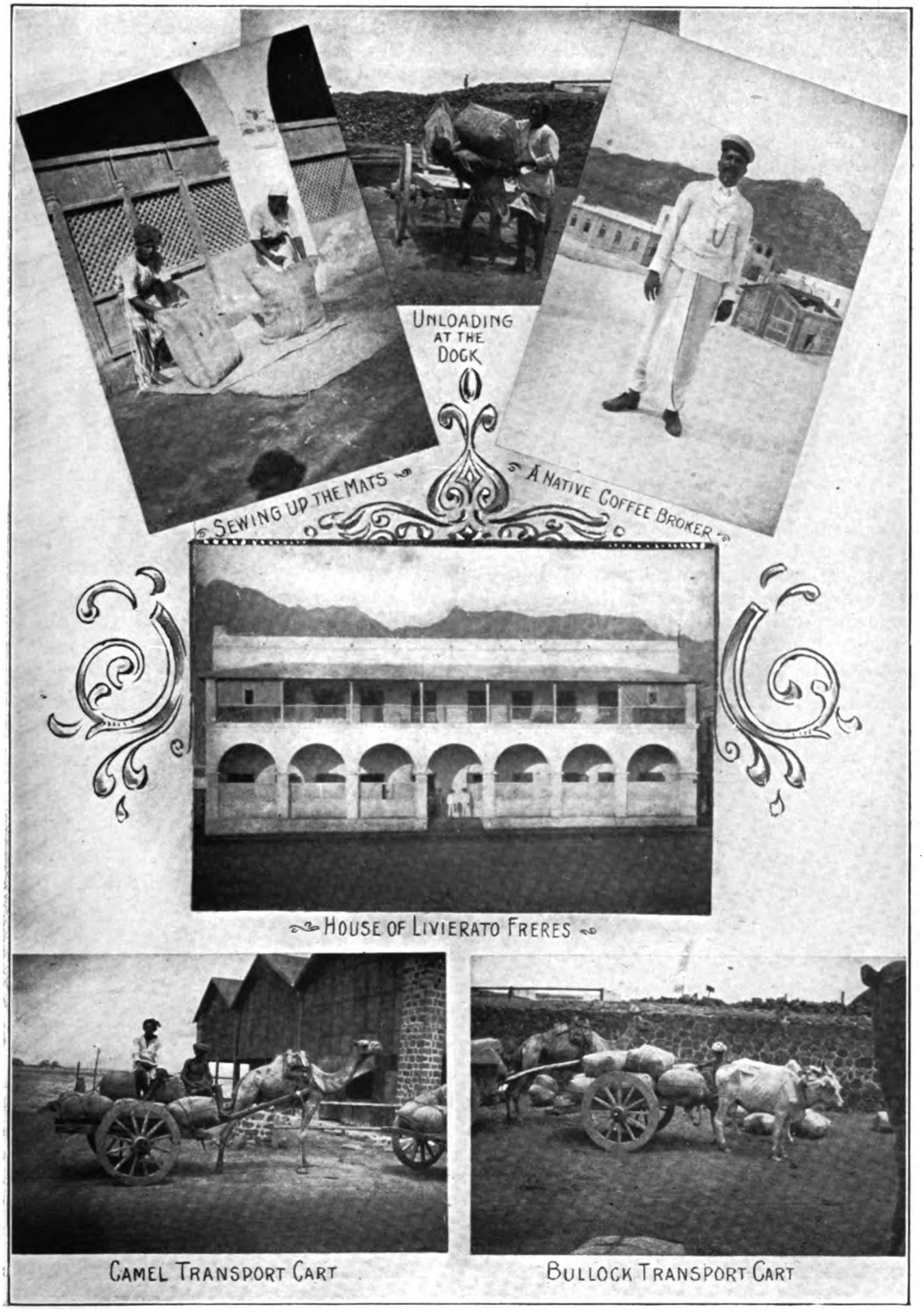
Buying Coffee in Arabia

Most of the coffee in Arabia is grown in almost inaccessible mountain valleys by native Arabs, and is transported by camel caravan to Aden or Hodeida, where it is sold to agents of foreign importing houses.

SELLING COFFEE AT ADEN BY TAPPING HANDS UNDER COVER

Mocha, once the principal exporting city for coffee, was abandoned as a coffee port early in the nineteenth century, chiefly because of the difficulty of keeping the roadstead of the harbor free from sandbars.

In Aden there is a kind of open-air coffee "exchange" (as in Harar) where the camel trains unload their coffee from the interior. The European coffee merchant does not frequent it, but is represented by native brokers, through whom all coffee business is transacted. This native broker is an important person, and one of the most picturesque characters in Aden. He receives a commission of one and a half percent from both buyer and seller. Certain grades of coffee are purchasable only in Maria Theresa dollars; so a knowledge of exchange values is essential to the broker's calling.



PACKING AND TRANSPORTING COFFEE AT ADEN

In making coffee sales, the negotiations between buyer and seller are carried on by means of finger taps under a handkerchief. The would-be purchaser reaches out his hand to the seller under cover of the cloth and makes his bid in the palm of the seller's hand by tapping his fingers. The code is well understood by both. Its advantage lies in the fact that a possible purchaser is enabled to make his bid in the presence of other buyers without the latter knowing what he is offering.

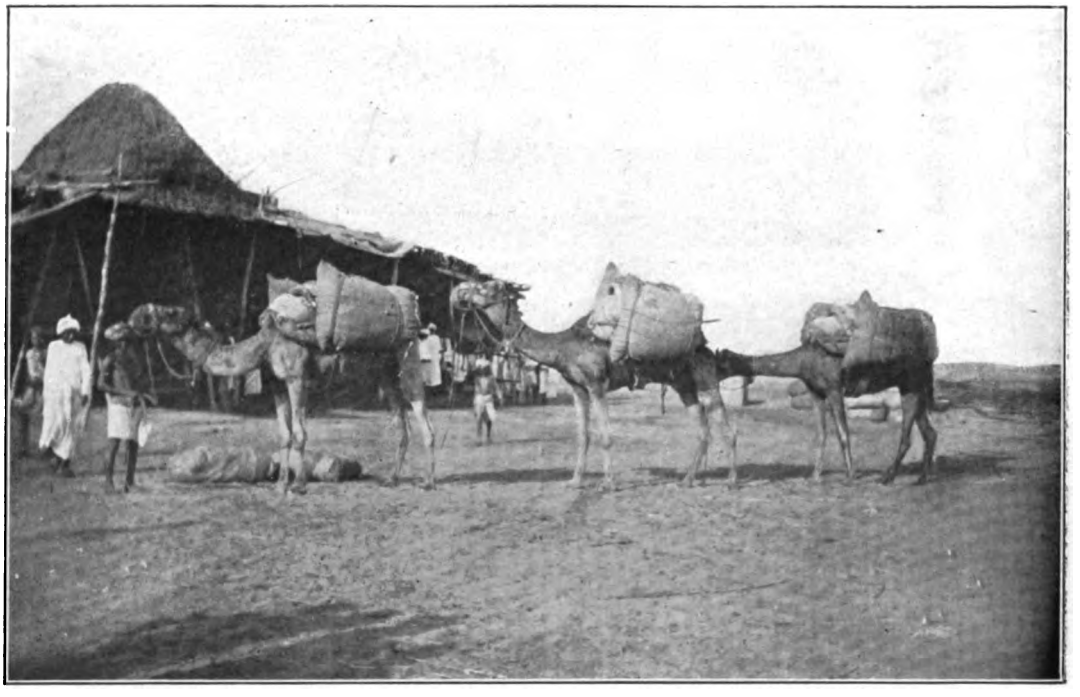
Buying Coffee in Netherlands India

In the Dutch East Indies cultivation of *Coffea arabica* has diminished, the decay of the industry beginning when Brazil and Central America became the dominant factors in the green market. Not so many years ago coffee growing and coffee trading were virtually government monopolies. Under government control each native family was required to keep from six hundred to a thousand coffee trees in bearing, and to sell two-fifths of the crop to the government. It was also compulsory to deliver the coffee cleaned and sorted to the official godowns, and to sell the crop at fixed prices — nine to twelve florins per picul previous to 1874, although forty to fifty florins were offered in the open market. Later, the price was advanced; until about 1900 the government paid fifteen florins per picul for coffee in parchment. All government coffee was sold at public auction in Batavia and Padang, these sales being held four times a year in Batavia and three times a year in Padang.

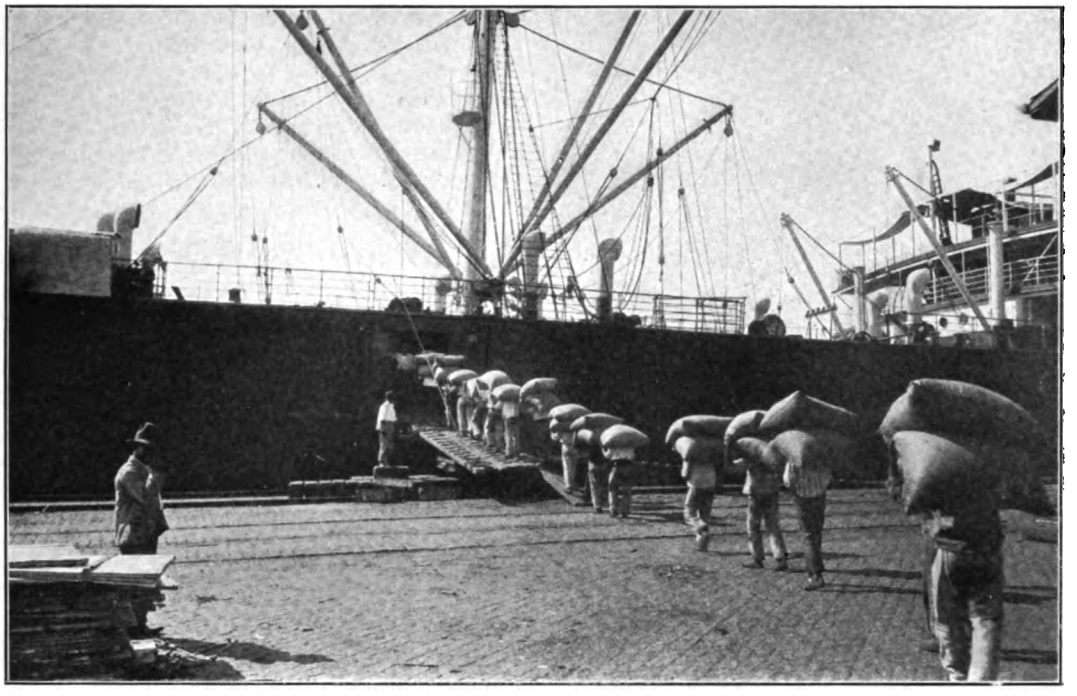
Coffee from private estates, not under government control and operated by European corporations or individuals, has now succeeded the government monopoly coffee. Private-estate crops are sold by public tender, usually on or about January 28 of each year. If the owners do not get the price they desire in Batavia or Padang, the coffee is sent to Amsterdam for disposal. Some coffees always are sent to Holland; because the directors of the company get a commission on all sales there, and also because the coffees are prepared especially for the Dutch market. The Hollander wants his coffee blue-green in color.

Loading Coffee at Santos

In Brazil, when the coffee has been rebagged and marked by both the *commisario* and the exporter, the coffee is again sampled. These samples are compared



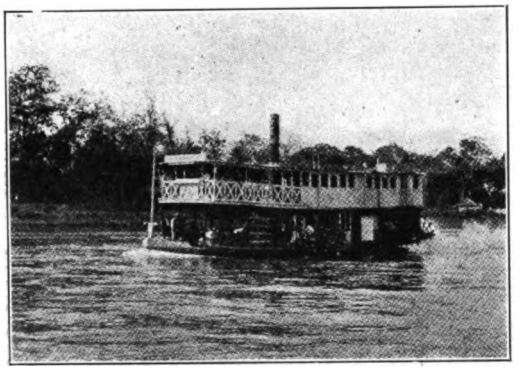
COFFEE CAMEL TRAIN ARRIVING AT THE HODEIDA CUSTOM-HOUSE FROM THE INTERIOR OF YEMEN



LOADING BY THE OLD-STYLE HAND-LABOR METHOD

HERE THE AUTOMATIC BELT POURS INTO THE HOLD A CONTINUOUS STREAM OF BAGS OF COFFEE

OLD AND NEW METHODS OF LOADING COFFEE AT SANTOS



A Coffee Freighter on the Cauca River, Colombia

with those by which the purchase was made; and if right, the bags are turned over to the dock-master, who sets his laborers to work loading ship. Two methods are used at Santos. The old familiar style of hand labor is still in evidence — men of all nationalities, but largely Spaniards and Portuguese, take the bags on their heads and carry them in single file up the gangplanks and into the hold of the ship. The dock company, however, operates a huge automatic loading machine, or belt, which saves a great deal of time and labor. In other Brazilian ports all loading is done by manual labor.

Recently, at the suggestion of the Commercial Association of Santos, the minister of transport of São Paulo ordered that coffees destined for legitimate traders should be transported during four days of the week, and those of a speculative nature during the remaining two days. A premium of as much as five milreis a bag has been paid by speculators in order to obtain immediate transport.

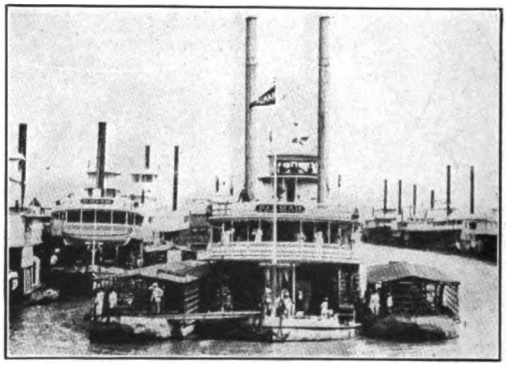
Shipping Coffee from Colombia

As Colombia ranks next to Brazil in coffee, a brief description of its transportation methods, which are unique, should be of interest to coffee shippers. A goodly portion of Colombia's coffee exports comes from the district around the little city of Cucuta, whose official name is San José de Cucuta. It is the capital of North Santander, is situated in a beautiful valley of the Colombian Andes mountains that is watered by several rivers, and is only about a half-hour's ride by motor from the Venezuelan frontier.

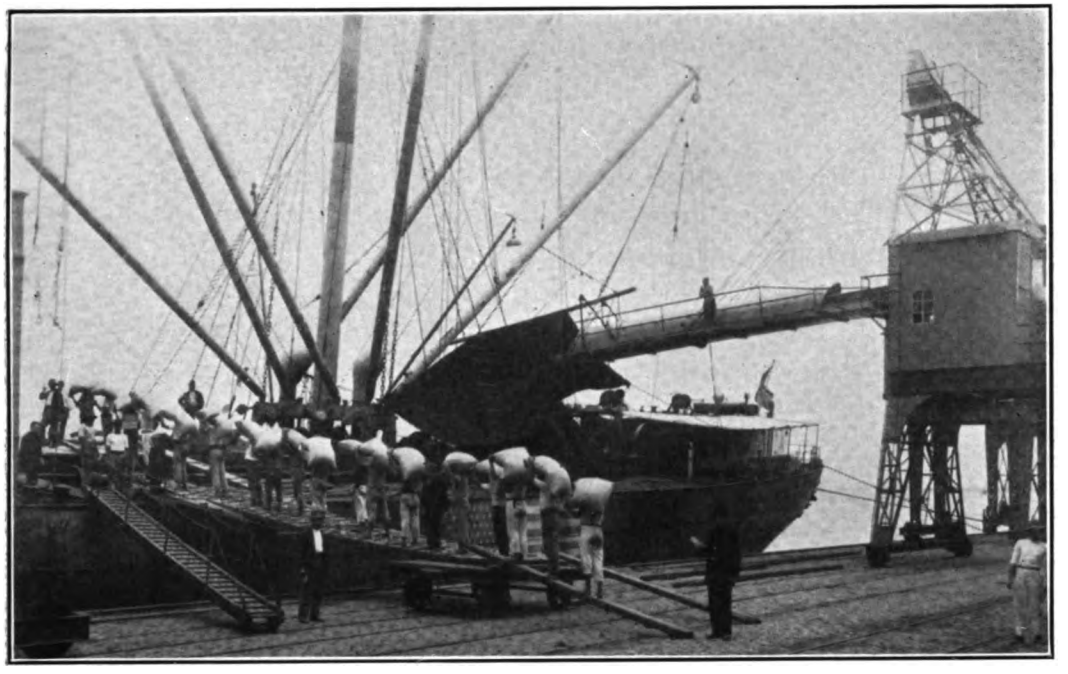
Due to its geographical position, Cucuta serves as the most convenient inland port and commercial center for most of the department of North Santander. For the same reason, it is forced to depend on Maracaibo as its seaport, even though the Venezuelan government has a number of annoying laws controlling the commerce thus conducted. . The Colombian ports of Baranquilla and Cartagena on the Atlantic are too distant from Cucuta to be available; and a large part of the traffic would have to be done on mule-back across one of the most formidable ranges of the Colombian Andes, involving high cost and delay in transportation. Yet its frontier position makes it possible for Cucuta to have important commercial relations with the neighboring republic of Venezuela, and to enjoy exceptional privileges from the Colombian central government.

A cargo of coffee leaving Cucuta has to go through the following steps on its way to a foreign market:

1. From Cucuta, it travels thirty-five miles by railroad to Puerto Villamizar, a Colombian river port on the Zulia river.
2. At Puerto Villamizar it is loaded into small, flat-bottomed, steel lighters that are taken to Puerto Encontrados by man power. Puerto Encontrados, belonging to Venezuela, is on the Catatumbo river; and the trip from Villamizar takes from two to four days, depending on the depth of water in the river. During high water, river steamers are also used, and make the trip in less than a day.
3. At Encontrados the cargo is loaded on river steamboats more or less of the Mississippi river type, which take it to Maracaibo, Venezuela. Coffee is also carried to Maracaibo by small sailing vessels.
4. At Maracaibo it is taken by ocean vessel, which either carries it direct to New



Coffee Steamers on the Magdalena, Colombia



OLD AND NEW METHODS EMPLOYED IN LOADING HEAVY CARGO ON THE SANTA CECILIA

York or to Curaçao, Dutch West Indies, where it is transhipped to steamers plying between New York and Curaçao. It is obvious that the many transhipments that coffee coming from Cucuta has to undergo greatly retard its arrival at a foreign port; and a cargo sometimes takes a month or more to reach New York.

Coffee from Cucuta is stored in the Venezuelan custom-house, from which it must be shipped for export within forty-five days, or the shipper runs the risk of having it declared by the Venezuelan government for *consumo* (home consumption) at a prohibitory tariff. Arrangements can be made at considerable cost to have the coffee taken to a private warehouse; but it is no longer possible to make up the chops in Maracaibo, as was done formerly with all the Cucutas. The Venezuelan customs will not even allow the Maracaibo forwarding agent the same chops, as a general rule. Special permission must be obtained to change any bags that are stained or damaged. Schooners from Curaçao have, in the past, carried a great deal of the Colombian coffee to Curaçao.

Port Handling Charges in Brazil

It is almost impossible to list all the various charges for the handling of coffee at the port of shipment in Brazil, the figures not being accessible to outsiders. Some figures, such as warehouse charges and various forms of tax, are obtainable, however. For every bag of coffee which is in warehouse over forty-eight hours from the time of its arrival from the railroad there is a charge of two hundred reis (about five cents). In São Paulo there is an export tax of nine percent ad valorem levied by the state, and in Rio the state tax is eight and a half percent. Then there is a surtax of five francs per bag in Santos, and of three francs in Rio, which goes toward defraying the expenses of valorization. For every bag of coffee that passes over the dock the dock company charges one hundred reis (about two and a half cents).

Some Record Coffee Cargoes

With its superior loading and shipping facilities Brazil has been able to send extraordinarily large cargoes of coffee to the United States since the development of large modern freight-carrying steamships. While 75,000 or 90,000 bag cargoes were of common occurrence just prior to the outbreak of the World War, several shipments of more than 100,000 bags were made in the years 1915, 1916, and 1917. Up to January, 1919, the record was held by the

steamship Bjornstjerne Bjornson which unloaded 136,424 bags at New York on November 17, 1915. Other shipments of more than 100,000 bags were by the Rossetti (December, 1900), 125,918 bags; the Wascana (March 3, 1915), 108,781 bags; the Wagama (October, 1916), 105,650 bags; the American (October 23, 1916), 124,212 bags; the Santa Cecilia (November 2, 1916), 105,500 bags, and the Dakotan (January 6, 1917), which carried 136,387 bags.

Transport Overseas

To bring green coffee to the consuming markets, both steamships and sailing vessels are used, although the latter have almost wholly given way to the speedier and more capacious modern steamers. Because of its large consumption, a constant stream of vessels is always on the way to the markets of the United States. The majority of these unload at New York, which in 1920 received about fifty-nine percent of all the coffee imported into this country. New Orleans came next, with about twenty-five percent; and San Francisco third, with about twelve percent.

The approximate time consumed in transporting green coffee overseas from the principal producing countries to the United States by freight steamships is shown in the table in the next column.

In some cases, that of Guadeloupe, for instance, the vessels stop at a number of ports, and this lengthens the time. This is also true of vessels running on the west coast of Central America and of those from Aden.

During the World War, one shipment of Timor coffee consumed three and a half years coming from Java to New York. It was aboard the German steamship Brisbane, which cleared from Batavia, July 4, 1914, and fearing capture, took refuge in Goa, Portuguese India, where it lay until Portugal joined the Allies. Then the Portuguese seized the vessel, and turned it over to the British, who moved it to Bombay. Here the cargo was finally transhipped to the City of Adelaide, reaching New York in January, 1918, three and a half years after the coffee left Batavia.

Java Coffee "Ex-Sailing Ships"

Up to 1915 it was the custom to ship considerable Java coffee to New York in slow-going sailing vessels of the type in favor a hundred years ago. Java coffees "ex-

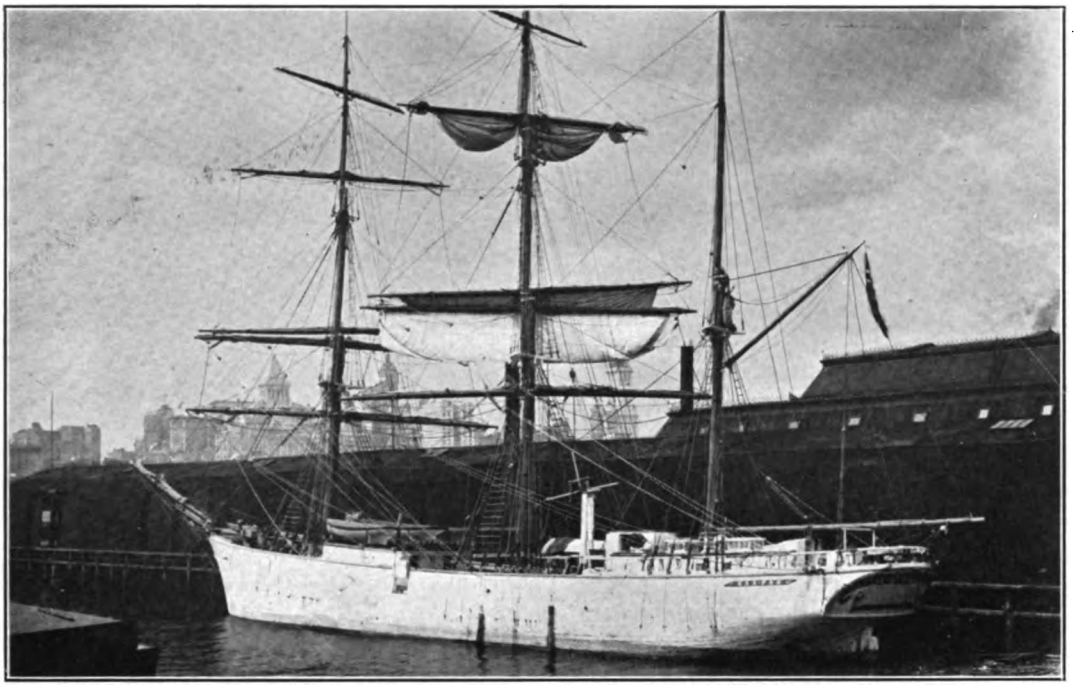
TRANSPORTATION TIME FOR COFFEE[1]

Rio de Janeiro	to	New York	11 to 16	days
Santos	"	"	14 to 18	"
Bahia	"	"	17	"
Victoria	"	"	19	"
Maracaibo	"	"	10	"
Puerto Cabello	"	"	10	"
La Guaira	"	"	8	"
Costa Rica	"	"	10	"
Salvador	"	"	18	"
Mexico	"	"	9	"
Guatemala (Puerto Barrios)	"	"	11	"
Colombia	"	"	10	"
Haiti	"	"	7	"
Porto Rico	"	"	5	"
Guadeloupe	"	"	10	"
Hawaii (via P. C.)	"	"	28	"
Java (via Suez)	"	"	30	"
Sumatra (via Suez)	"	"	30	"
Singapore (via Suez)	"	"	35	"
India (via Suez)	"	"	35	"
Aden (via Suez)	"	"	45	"
Porto Rico	"	New Orleans	7	"
Guadeloupe	"	"	10	"
Haiti	"	"	7	"
Guatemala	"	"	8	"
Costa Rica	"	"	7	"
Colombia	"	"	6	"
Mexico	"	"	4	"
Salvador	"	"	15	"
Guatemala	"	San Francisco	10	"
Costa Rica	"	"	18	"
Salvador	"	"	14	"
Mexico	"	"	8	"
Hawaii	"	"	8	"
Singapore	"	"	30	"
India	"	"	33	"

[1] The American Legion and the Southern Cross, of the Munson Line, make the journey from Rio de Janeiro to New York in eleven days. These are freight-and-passenger vessels, and have carried as many as 5,000 bags of coffee at one time.

sailing ships" always commanded a premium because of the natural sweating they experienced in transit. Attempts to imitate this natural sweating process by steam-heating the coffees that reached New York by the faster-going steamship lines, and interference therewith by the pure-food authorities, caused a falling off in the demand for "light," "brown," or "extra brown" Dutch East Indian growths; and gradually the picturesque sailing vessels were seen no more in New York harbor. At the end they were mostly Norwegian barks of the type of the Gaa Paa.

It usually took from four to five months to make the trip from Padang or Batavia



UNLOADING JAVA COFFEE FROM A SAILING VESSEL AT A BROOKLYN DOCK
The ship is the Gaa Paa, which made the voyage from Padang in five months in 1912

to New York. Crossing the Equator twice, first in the Indian Ocean, then in the South Atlantic, the trip was more than equal to circumnavigating the earth in our latitude. In the hold of the vessel the cargo underwent a sweating that gave to the coffee a rare shade of color and that, in the opinion of coffee experts, greatly enhanced its flavor and body. The captain always received a handsome gratuity if the coffee turned "extra brown."

The demand for sweated, or brown, Javas probably had its origin in the good old days when the American housewife bought her coffee green and roasted it herself in a skillet over a quick fire. Coffee slightly brown was looked upon with favor; for every good housewife in those days knew that green coffee changed its color in aging, and that of course aged coffee was best.

And so it came about that Java coffees were preferably shipped in slow-going Dutch sailing vessels, because it was desirable to have a long voyage under the hot tropical sun suitably to sweat the coffee on its way to market and to have it a handsome brown on arrival. The sweating frequently produced a musty flavor which, if not too pronounced, was highly prized by experts. When the ship left Padang or Batavia the hatches were battened down, not to be opened again until New York harbor was reached.

Many of the old-style Dutch sailing vessels were built somewhat after the pattern of the Goed Vrouw, which Irving tells us was a hundred feet long, a hundred feet wide, and a hundred feet high. Sometimes she sailed forward, sometimes backward, and sometimes sideways. After dark, the lights were put out, all sail was taken in, and all hands turned in for the night.

The last of the coffee-carrying sailing vessels to reach the United States was the bark Padang, which arrived in New York on Christmas day, 1914.

Handling Coffee at New York

The handling of the cargoes of coffee when they arrive at their destination is a source of wonder to the layman. There is probably no better place to study the handling of coffee than in New York City — the world's largest coffee center. Millions of bags of coffee pass into consumption every year through its docks, and scarcely a day goes by when there are not one or more ships discharging coffee upon the

THE BUSH TERMINAL SYSTEM OF DOCKS AND WAREHOUSES

Much of the green coffee received in New York is discharged and stored here, at one of the most modern waterfront and terminal developments in the world

AIRPLANE VIEW OF NEW YORK DOCK COMPANY'S PIERS AND WAREHOUSES

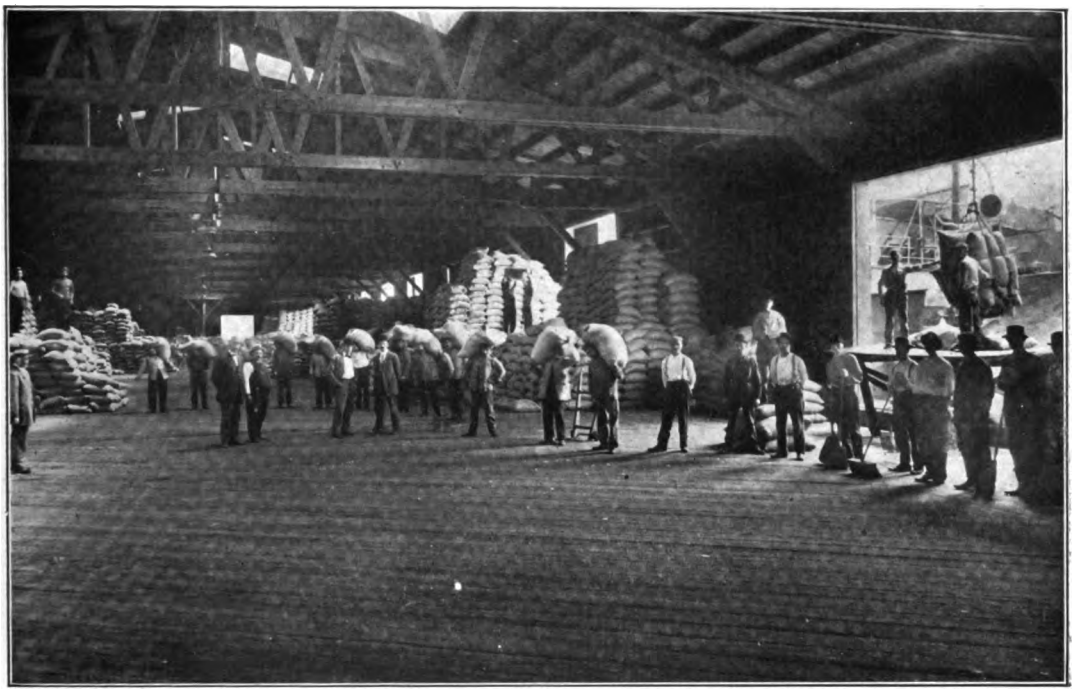
This is the Fulton Street section of the Brooklyn waterfront, where more than half the coffee received in New York is unloaded. The storage warehouses are to be seen back of the piers

RECEIVING PIERS FOR COFFEE AT NEW YORK

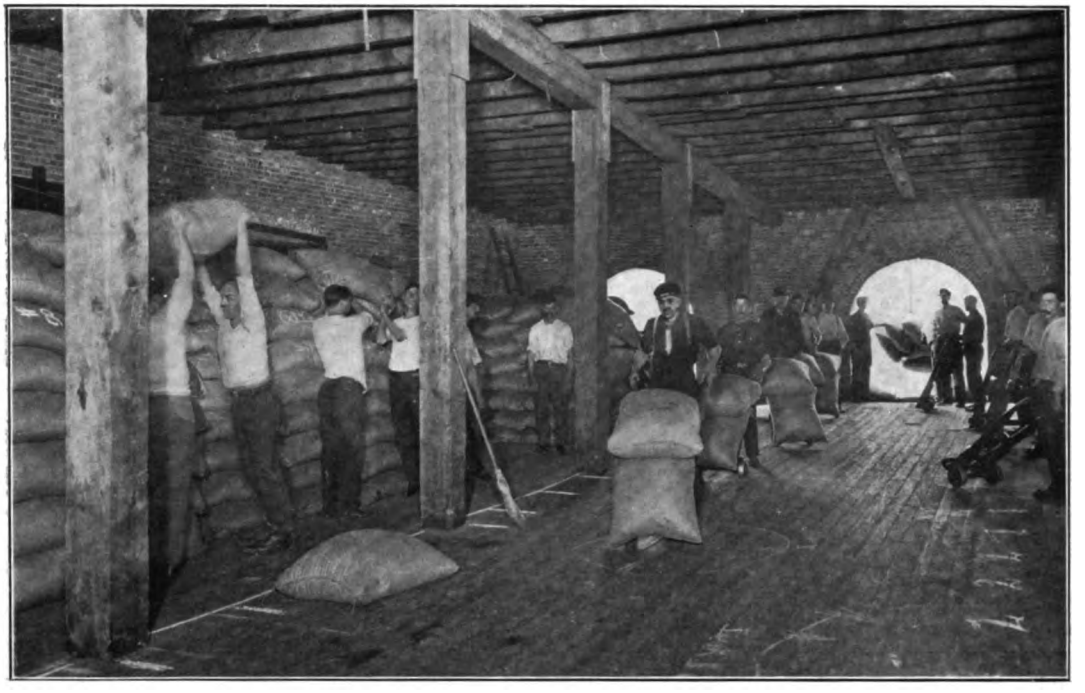
docks lining the Brooklyn shore, the center of the coffee-warehouse district for New York. In 1921, the New York Dock Company alone had 159 bonded warehouses with a storage capacity of some 65,000,000 cubic feet; and 34 piers, the longest measuring 1,193 feet and containing more than 175,000 square feet. These piers have a total deck space of sixty-one and a half acres. The wharfage distance is more than nine and a third miles. More than twenty steamship lines berth their vessels there regularly, and many of them are coffee ships. The warehouses have direct connections with all the principal railway trunk lines running into the New York district; and the whole property of the company stretches along the waterfront opposite lower Manhattan for about two and one-half miles.

Although coffee is admitted to the United States free of duty, it is subject to practically the same formalities as dutiable goods. Before the cargo can be "broken out," a government permit to "land and deliver" must be placed in the hands of the customs inspector on the dock. This done, the ship's samples, which consist of the samples sent by the exporter to the importer, are taken to the United States appraiser's office for inspection, and are then delivered to the importer's representative. Meanwhile the shipping documents covering the cargo, including bills of lading and consular invoices, have been sent to the post office for delivery to banks and bankers' agents, who check and deliver them to the customs officers for entry. The government requires that this entry shall be made within forty-eight hours of the vessel's arrival, else the cargo will be stored in a United States bonded warehouse under what is known as "general order" which makes the consignee liable for storage and cartage charges.

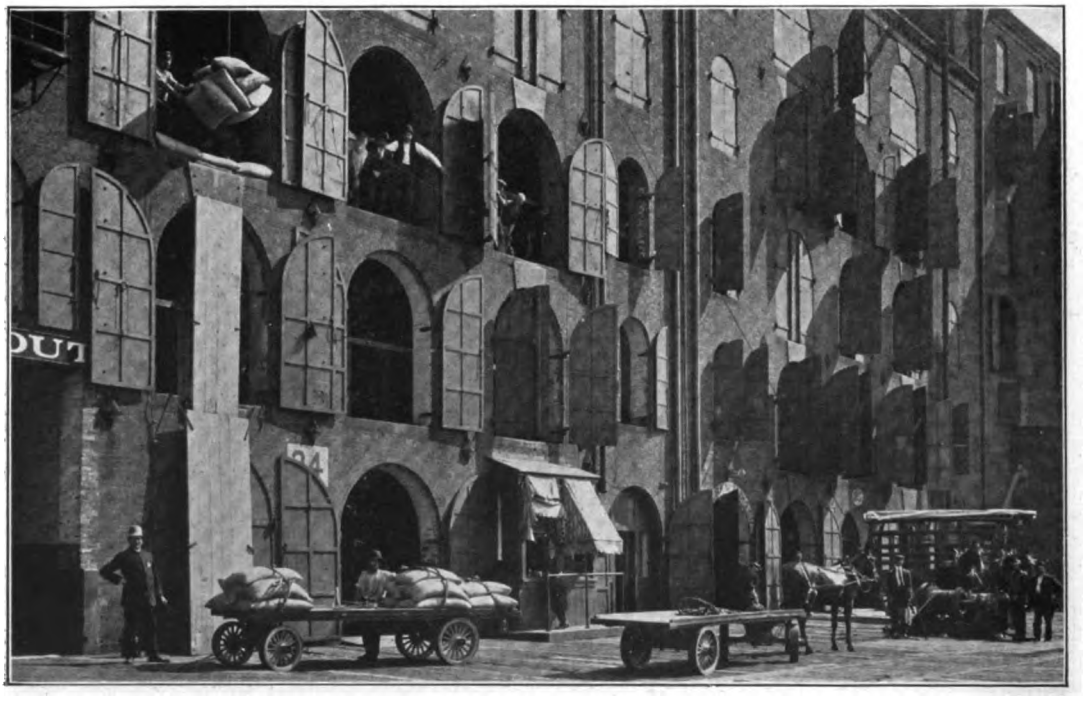
When a coffee ship arrives in New York, not much time is lost in discharging the cargo. As soon as the vessel is securely moored to the pier, and the government's permission to "land and deliver" is secured, the hatches are removed, the coffee is hauled out of the hold by block and tackle and swung off in slings to the pier, where dock laborers carry the bags to their proper places. If each cargo consisted of one consignment to a single importer, and contained only one variety of coffee, unloading would be a comparatively simple affair. In general practise, however, the cargoes consist of a large number of con-



UNLOADING COFFEE AT ONE OF THE COVERED PIERS OF THE NEW YORK DOCK COMPANY



STORING COFFEE BY MARKS AND CHOPS



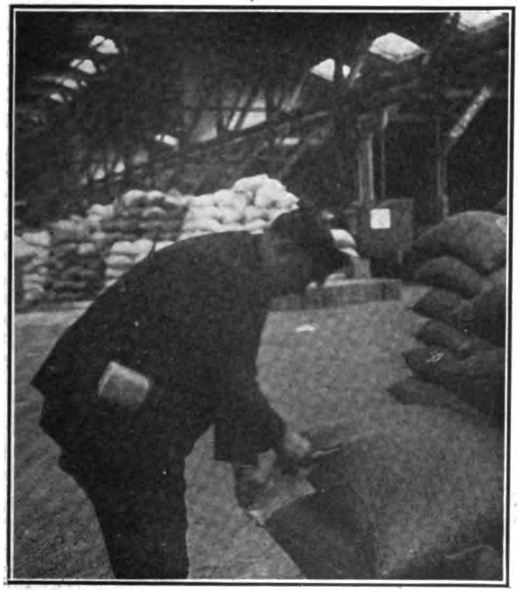
HOISTING COFFEE INTO THE STORAGE WAREHOUSES ADJOINING THE BROOKLYN PIERS

RECEIVING AND STORING COFFEE AT NEW YORK

signments and a variety of grades, necessitating a careful sorting as unloading progresses. Accordingly, even before the unloading begins, the dock is chalked off into squares, each square having a number, or symbol, representing a particular consignment. As the bags come up out of the hold, the foreman of the laborers, who has a key to the brand marks on the bags, indicates where each bag is to be placed. Coffee to be reshipped, either by lighter or rail, is heaped in piles by itself until loaded on to the lighters or freight cars.

The next step is to transfer the cargo to the warehouse, and to separate each consignment according to the various kinds of coffee making up the invoices. When the importer gives his orders to store, he sends also a list of the different kinds of coffees in his consignment, called "chops" by the trade, with directions how to divide the shipment. To do this, the floor of the warehouse is chalked off into squares, as was done on the dock; but now the numbers, or symbols, in each space indicate the chops in each invoice, or consignment.

The importer naturally is eager to sample the newly arrived coffee. Sampling is generally done by trained warehouse employees, who are equipped with coffee triers, sampling instruments resembling apple-corers, which they thrust into the bags. The instrument is hollow, and the coffee flows into the hand of the sampler, who places each sample in a paper bag which is marked to indicate the chop. The total sample of each chop usually consists of about ten pounds of coffee, which the importer compares with the exporter's sample.



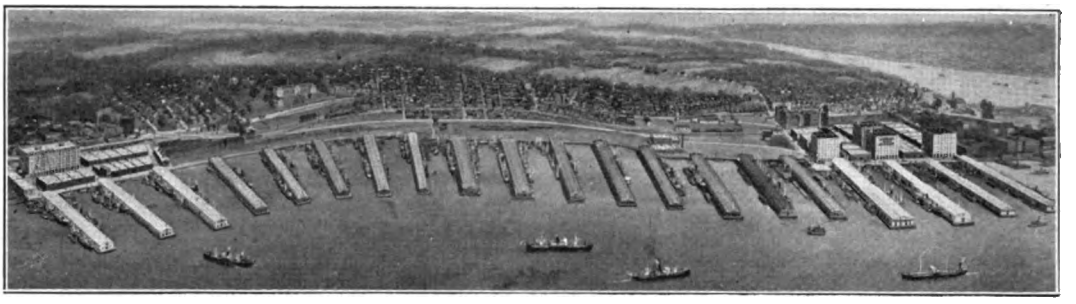
TESTER AT WORK, BUSH TERMINAL, NEW YORK

LOADING LIGHTERS, BUSH DOCKS, NEW YORK

When sampling for trade delivery, about two-thirds of the bags in a chop are tried. But when sampling for delivery on Coffee Exchange contract, every bag must be tested, and care taken that each chop is uniform in color, kind, and quality. Coffee for Exchange delivery must be stored in a warehouse licensed by the Exchange; and the warehouseman is responsible for the uniformity of grade of each chop.

When approximately ninety percent of the cargo has been unloaded and stored, the warehouse issues what has become known as the "last bag notice." In the majority of cases the coffee has been sold before arrival; and on receipt of the last bag notice, the importer can transfer ownership of the coffee and save interest.

In a cargo of 75,000 to 100,000 bags of coffee that have been hurriedly loaded in the producing country and unloaded at destination in equal haste, a small portion of the cargo is almost certain to be damaged. Generally the damage is slight. If a bag is torn or stained, the coffee is placed in a new bag. If the contents have become



THE NEW TERMINAL SYSTEM ON STATEN ISLAND

On the left are three piers of the Pouch Terminal at Clifton; on the right, four of the American Dock Terminal at Tompkinsville; and between these are thirteen piers of the new Municipal Terminal

mildewed, the damaged portion is taken to a warehouse for reconditioning; while the sound coffee is thoroughly aired to remove the odor and is then placed in a clean bag. The reconditioned lot is put into a separate package and forwarded to the buyer with a "reconditioning statement" that shows what has been done.

Bags that have become torn in transit, and parts of their contents spilled, are called "slacks." These are weighed as they arrive on the dock by a licensed public weigher; and a sufficient quantity of the coffee remaining on the floor of the ship's hold is put into the bag to make it of the proper weight. The expense of reconditioning and rebagging is generally borne by the marine insurance companies. When the entire cargo is unloaded, and the slacks and bad-order bags are weighed and marked, the warehouseman tallies up the records of his clerks, and renders a corrected chop list to the consignee.

Electric Tractors and Trailers

Another district along the water front of Brooklyn where coffee is discharged in large quantities is that between Thirty-third and Forty-fourth Streets, south Brooklyn, occupied by the Bush Terminal Stores. This plant is laid out with railroad spurs on every pier, so that its own

MOTOR TRACTOR MOVING COFFEE AT THE BUSH TERMINAL DOCKS, BROOKLYN

transfer cars, or the cars of the railroads running out of New York, can be run into the sheds of the docks where coffee is being discharged from the ships. The methods employed by the Bush Terminal are similar to those just described, except that all the coffee is handled by electrically-manipulated cars or trucks, in some instances the powerful little tractors hauling many "trailers" to various parts of the yards.

Handling Charges at New York

Before the World War, it cost approximately one-half cent a bag to handle green coffee from the vessel to warehouse and in storage in New York. The rate advanced nearly one hundred percent in the latter part of 1919, then dropped slightly, although it is still (1922) above the pre-war price. Other handling charges are shown in the following tabulation:

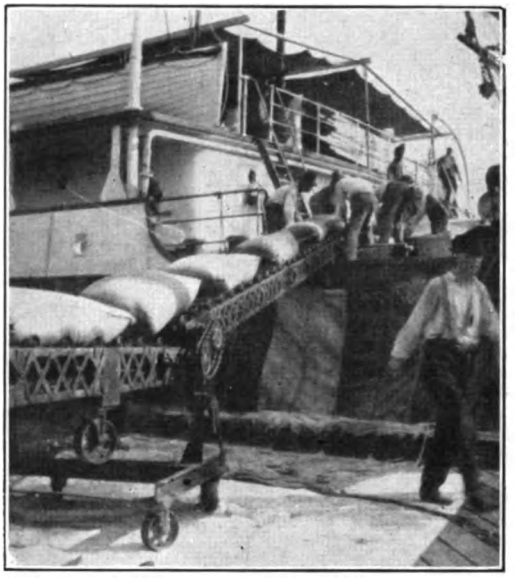
COFFEE HANDLING CHARGES AT NEW YORK

	Pre-war prices Cents per bag (132 lbs.)	Present prices Cents per bag (132 lbs.)
Storage	3 to 4	5 to 8
Labor	3 to 4	5 to 8
Sampling for damage	1	1
Cleaning	15	20
Dumping and mixing	10	15
Dumping and airing	10	15
Shoveling and airing	10	15
Transferring coffee from floor to floor.	4	8
Marking	1	1
Labor at vessel	$9 per M	$12.50 to $15 per M

The warehousemen in 1919 charged four cents per bag for loading into railroad cars. This charge was discontinued in 1921. The cost of weighing increased from two and one-half cents per bag in 1914 to four and one-half cents in 1919, and then dropped to the present price of three to three and one-half cents. Other handling charges at the port of New York are:

OTHER HANDLING CHARGES, 1922

	Cents per bag (132 lbs.)
Drawing samples, each 10 lbs.	17 to 20
Grading for variation	4
Matching in	12
Reducing or evening off slack	9
Transferring to new bag	10
Trucking to weigher in store	3
Collecting and preparing sweepings	25
Delivering sample below Canal Street	75
Each additional sample	10 to 15
New bags	15
Old bags	6



UNLOADING COFFEE WITH MODERN CONVEYOR, NEW ORLEANS

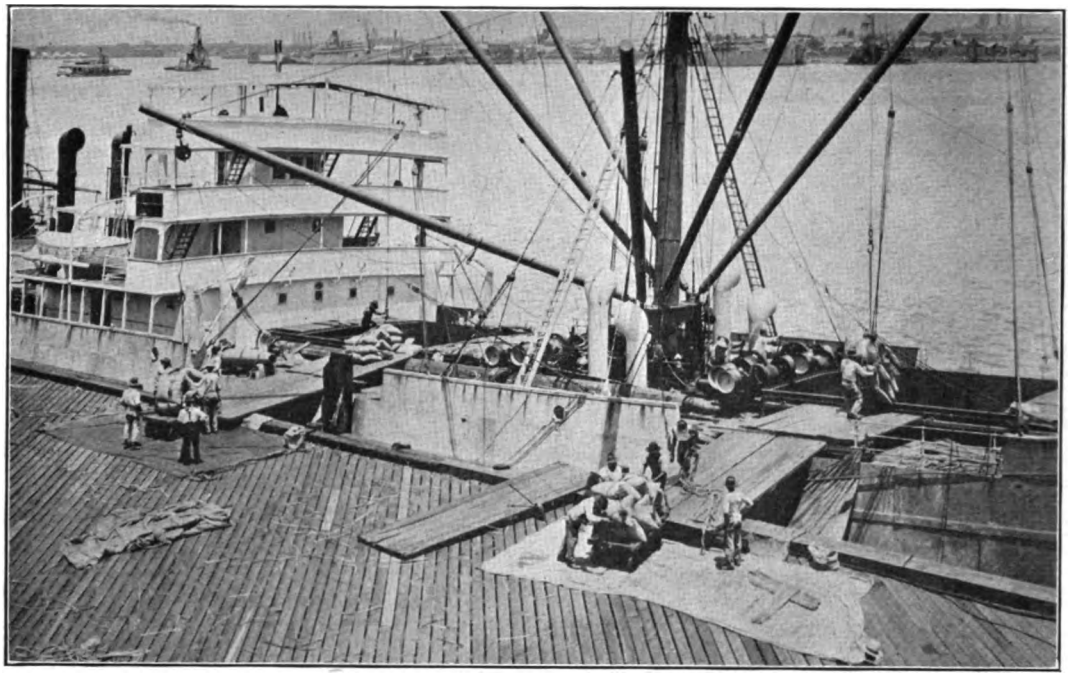
A plan intended to cut down handling costs in New York, and to expedite deliveries, was inaugurated by the National Coffee Roasters Association at the beginning of 1920. The Association formed a freight-forwarding bureau, and invited members to have their coffee shipments handled through the bureau. The charges for forwarding direct importations are two cents per bag. Cartage charges vary from six to eighteen cents per hundred pounds. Claims are handled without charge.

The Seven Stages of Transportation

The foregoing story has taken the reader through the seven most direct routes that lead from the plantation to the roaster: first, from the patio to the railroad or river; then to the city of export; into the warehouses there; then into the steamers; out of them, and upon the wharf at the port of destination; from the wharf into the warehouses; and, finally, from the warehouses to the roasting rooms. It will be understood that in some instances where the plantation is hidden away in the mountains, it is necessary to relay the coffee; and again, at this end, the coffee is very often transhipped. In such cases, more handlings are required.

Handling Coffee at New Orleans

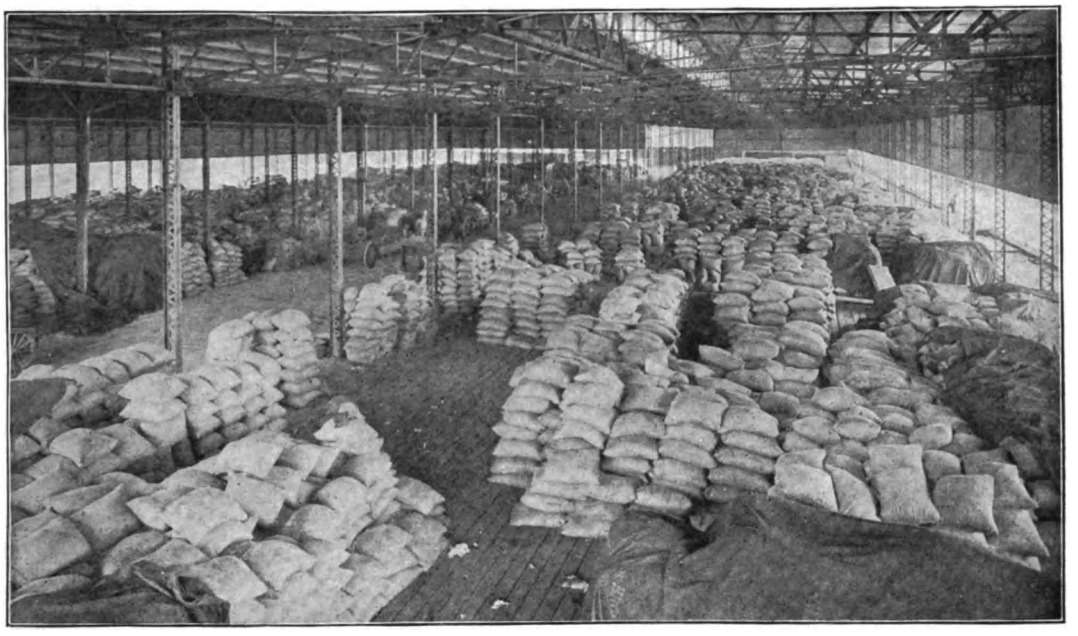
Coffee ships are unloaded in New Orleans, the second coffee port in the United



UNLOADING A COFFEE SHIP BY BLOCK AND TACKLE AT THE PORT OF NEW ORLEANS

IN FOREGROUND — LOADING COFFEE BY MEANS OF AN AUTOMATIC TRAVELING-BELT CONVEYOR, ON GOVERNMENT BARGES FOR ST. LOUIS

COFFEE-HANDLING SCENES ON THE WHARVES AT NEW ORLEANS



SHOWING HOW COFFEE IS STORED UNDER STEEL-COVERED SHEDS AT NEW ORLEANS

States, in about the same general manner as in New York, with the important exception that the block-and-tackle system for transferring the bags from the ship to the dock has been largely supplanted by the automatic traveling-belt conveyor system. Another notable feature is New Orleans' steel-roofed piers, whereon the coffee can be stored until ready for shipment to the interior. Because of the class of labor — mostly negro — employed in unloading ships, New Orleans has found it expedient to retain the old flag system to indicate the part of the pier where each mark of coffee is to be piled as taken from the vessel. These little flags vary in shape, color and printed pattern, each representing a particular lot of coffee, and they are firmly fixed at the part of the pier where those bags should be stacked. Trained checkers read the marks on the bags as the laborers carry them past, and tell the carrier where the bag should be placed. To the illiterate laborers the checker's cries of "blue check," "green ball," "red heart," "black hand," and the like, are more understandable than such indications as letters or numbers.

Handling Coffee at San Francisco

San Francisco ranks third in the list of United States coffee ports, having received its greatest development in the four years of the World War, when the flow of Central American coffees was largely diverted from Hamburg to the Californian port. In the course of these four years, the annual volume of coffee imports increased from some 380,000 bags to more than 1,000,000 bags in 1918. The bulk of these importations came from Central America, though some came from Hawaii, India, and Brazil and other South American countries. Because of its improved unloading and distributing facilities, San Francisco claims to be able to handle a cargo of coffee more rapidly than either New York or New Orleans.

Handling Central American coffees in San Francisco is distinctly different from the business in Brazils. In order to secure the Central American planter's crops, the importers find it necessary to finance his operations to a large extent. Consequently, the Central American trade is not a simple matter of buying and selling, but an intricate financial operation on the part of the San Francisco importers. Practically all the coffee coming in is either on consignment, or is already sold to established coffee-importing houses. Brokers do not deal direct with the exporters; and practically none of the roasters now import direct.

DISCHARGING COFFEE FROM A STEAMER JUST ARRIVED FROM CENTRAL AMERICA

HOW A LARGE CARGO OF COFFEE IS HANDLED ON THE PIER AS IT IS UNLOADED FROM THE SHIP

UNLOADING AND STORING COFFEE AT SAN FRANCISCO

In recent years San Francisco has adopted the practise of buying a large part of her coffee on the "to arrive" basis; that is the purchase has been made before the coffee is shipped from the producing country, or while in transit. This practise applies, of course, only to well known marks and standard grades. Coffee that has not been sold before arrival in San Francisco is generally sampled on the docks during unloading, although this is sometimes postponed until the consignment is in the warehouse. It is then graded and priced, and is offered for sale by samples through brokers.

San Francisco is better equipped with modern unloading machinery and other apparatus than either New Orleans or New York, even more liberal use being made there than in New Orleans of the automatic-belt conveyors both for transferring the bags from the ships to the docks and for stacking them in high tiers on the pier. Another notable feature of the modern coffee docks is that the newer ones are of steel and concrete and, as in New Orleans, are covered to protect the coffee from wind and storm.

Europe's Great Coffee Markets

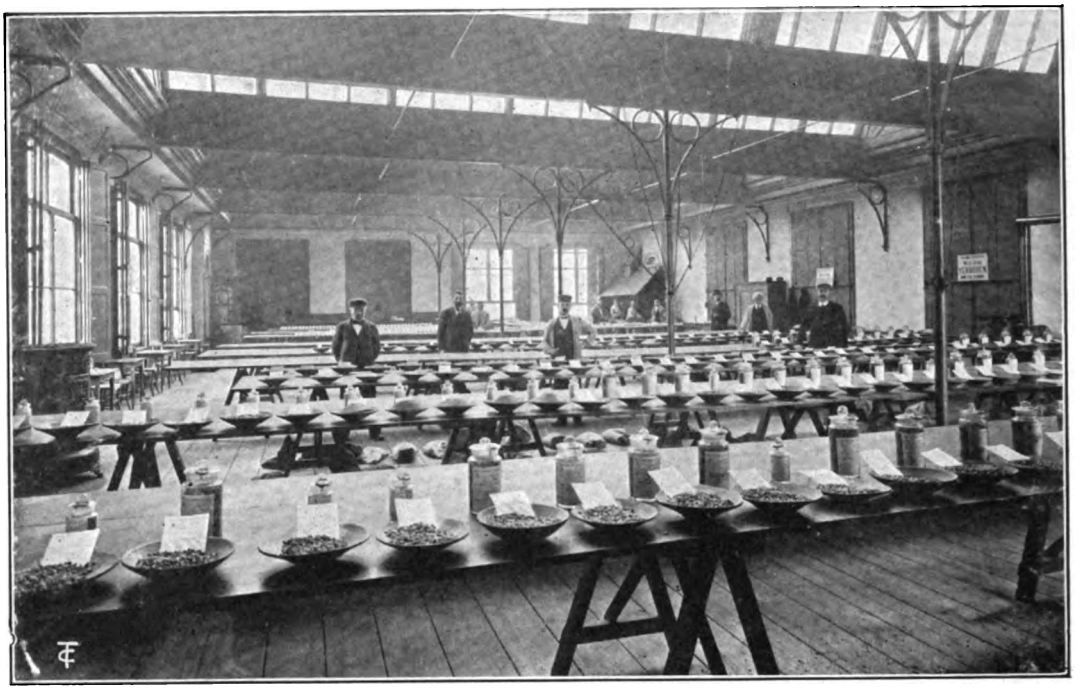
Europe has three great coffee-trading markets — Havre, Hamburg, and Antwerp. Rotterdam and Amsterdam are also important coffee centers, but rank far below the others named. In point of volume of stocks, Havre led the world before the war; while in respect to commercial transactions, it ranked second, with New York first. In pre-war days, the largest part of the world's visible supply of coffee was stored in the Havre bonded warehouses, being available for shipment to any part of Europe on short notice, or even to the United States in emergencies. Even during the World War, this French port remained a powerful factor in international coffee trading. Coffee trading in Havre, both exchange and "spot" transactions, follows about the same general lines as in New York and the other great coffee markets. Coffee "futures" are dealt in on the Havre Bourse.

Green coffee is sold in London by auction in Mincing Lane. On arrival, it is stored in bonded warehouses, and is released for domestic use only when customs duty at the rate of four and one-half pence per pound has been paid. The bulk of the coffee comes in parchment on consignment; and before sale, it must be hulled and sorted in the milling establishments, most of which are on the banks of the Thames.

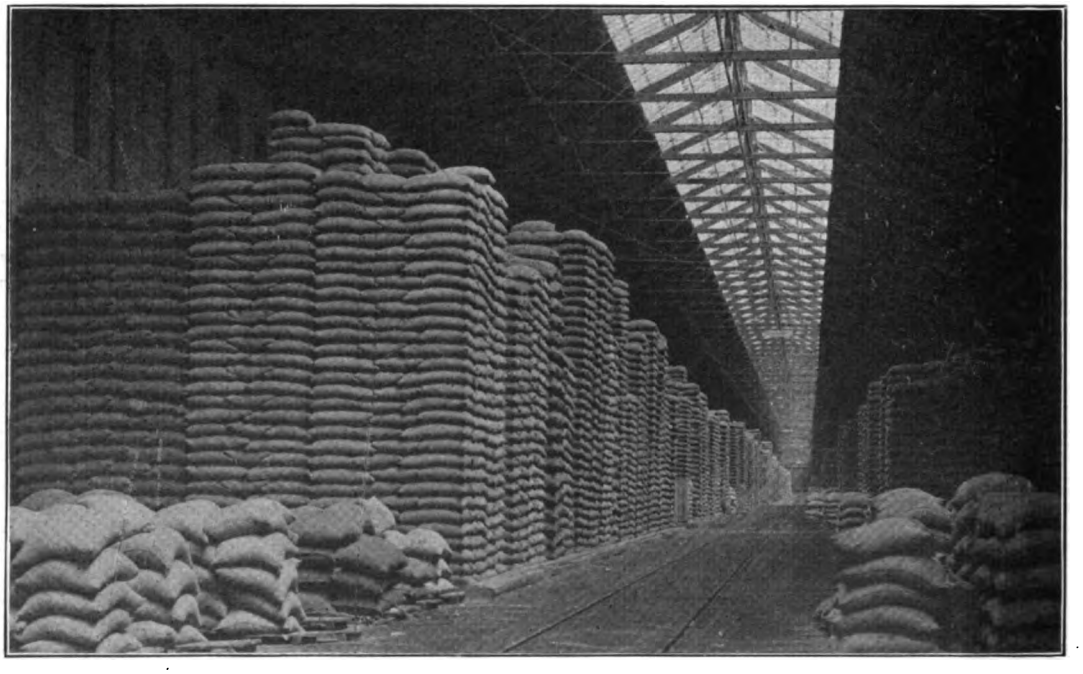
ONE OF THE MODERN DEVICES USED IN SAN FRANCISCO FOR HANDLING GREEN COFFEE

The auctions are held four times a week, usually on Tuesday, Wednesday, Thursday, and Friday. The sales are advertised in the market papers — chief among which is the *Public Ledger* — and also by the auctioneers, who issue catalogs of their offerings. A few hours before the beginning of the sale, samples are laid out for inspection by prospective buyers, who may cup-test them if they desire. The actual selling is done by competitive cash bidding, the highest bidder becoming the owner. Two classes of brokers do the bidding, one for home trade and the other for exporters.

Home trade takes about a tenth of the coffee, the remainder being sold for export. If the coffee is bought for re-export, it can be transferred to the shipping port, still in bond, and shipped out of the country without paying duty. During the World War, auctions were held about twice a week; but after the signing of the armistice in November 1918, the London traders resumed the four times a week practise.



COFFEE AUCTION SAMPLES ON DISPLAY AT AMSTERDAM



GREEN COFFEE STORED ON THE DOCKS AT HAVRE, FRANCE

HANDLING GREEN COFFEE AT TWO EUROPEAN PORTS

Coffee Exchanges and Trading Methods

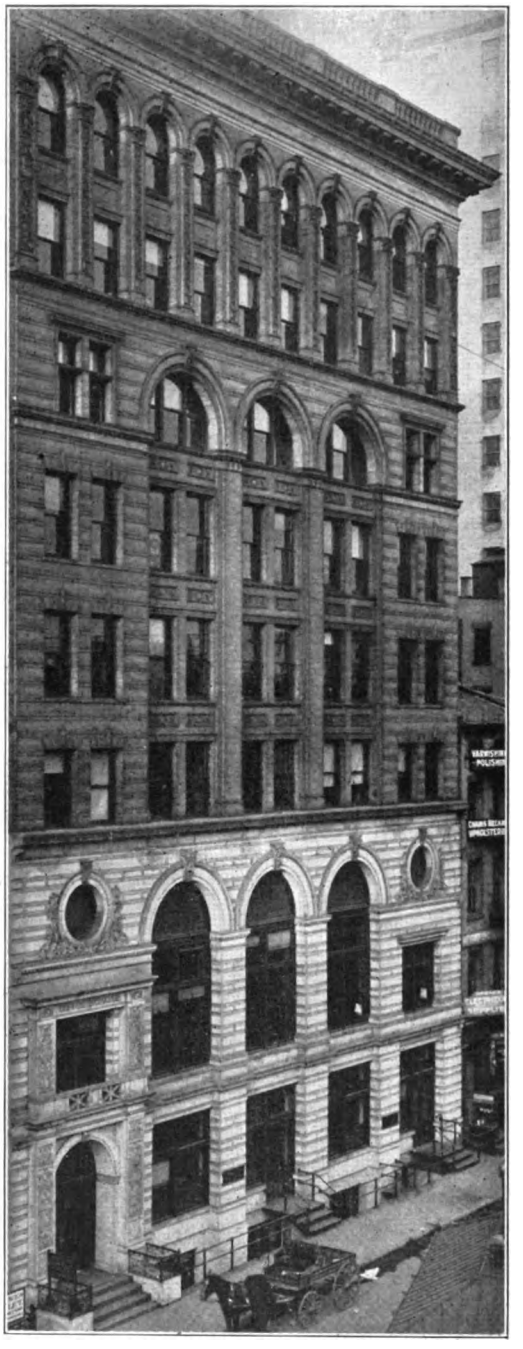
Green-coffee buyers in the large importing centers of the United States and Europe recognize two distinct markets in their operations. One of these is called the "spot" market; because the importers, brokers, jobbers, and roasters trading there deal in actual coffee in warehouses in the consuming country. In New York the spot market is located in the district of lower Wall Street, which includes a block or two each side on Front and Water Streets Here, coffee importers, coffee roasters, coffee dealers, and coffee brokers conduct their "street" sales.

The other market is designated as the "futures" market; and the trading is not concerned with actual coffee, but with the purchase or sale of contracts for future delivery of coffee that may still be on the trees in the producing country. Futures, or "options" as they are frequently called, are dealt in only on a coffee exchange. The principal exchanges are in New York, Havre, and Hamburg. New Orleans and San Francisco exchange dealers trade on their local boards of trade.

Coffee-exchange contracts are dealt in just like stocks and bonds. They are settled by the payment of the difference, or "margin"; and the option of delivering actual coffee is seldom exercised. Generally, the operations are either in the nature of ordinary speculation on margin or for the legitimate purpose of effecting "hedges" against holdings or short sales of actual coffees.

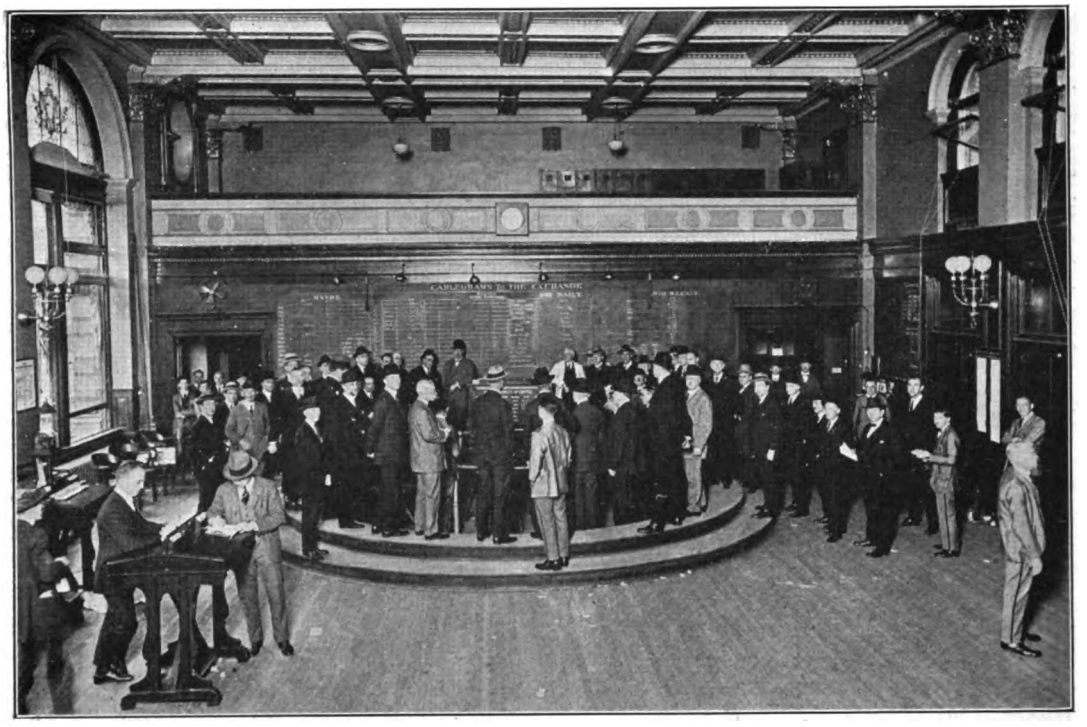
The New York Coffee and Sugar Exchange — the most important in the world, because of the volume of its business — deals in all coffees from North, South, and Central America, the West Indies and the East Indies (except those of the Robusta variety) and uses Type No. 7 as the basis for all Exchange quotations. All other types are judged in relation to it. In determining the number of a type, the coffee is graded by the number of imperfections contained in it.

These imperfections are black beans, broken beans, shells, immature beans ("quakers"), stones, and pods. For counting the imperfections, the black bean has been taken as the basis unit, and all imperfections, no matter what they may be, are calculated in terms of black beans, ac-



NEW YORK COFFEE AND SUGAR EXCHANGE

The building fronts on Hanover Square and extends through to Beaver Street. The exchange rooms are indicated by the arched windows on the second floor. The rest of the building is devoted to offices. The exchange was founded in 1881, and was the first national coffee trading organization in the world.



THE COFFEE PIT IN THE NEW YORK COFFEE AND SUGAR EXCHANGE

cording to a scale, which is practically as follows:

BLACK-BEAN SCALE

3 shells equal	1	black bean
5 "quakers" equal	1	" "
5 broken beans equal	1	" "
1 pod equals	1	" "
1 medium size stone equals	1	" "
2 small stones equal	1	" "
1 large stone equals	2 to 3	" "

By this scale a coffee containing no imperfections would be classified as Type No. 1. The test is made on one-pound samples. If a sample shows six black beans, or equivalent imperfections, it is graded as No. 2; if thirteen black beans, as No. 3; if twenty-nine black beans, as No. 4; if sixty black beans, as No. 5; if one hundred and ten black beans, as No. 6, and if more than one hundred and ten black beans, as No. 7 or No. 8. These two are graded by comparison with recognized exchange types. Coffees grading lower than No. 8 are not admissible to this country.

The quotation relationship of other types with the basic Rio No. 7 is shown in the table below.

By this scale one can determine that when Rio No. 7 is quoted at 17.10, Rio No. 2 is 18.60, Santos No. 3, 19.10, and Bogota No. 5, 18.10. The quotations are on the pound and cents basis.

In the spot market, a trader may also buy or sell coffee "to arrive"; that is, a consignment that is aboard ship on the way to the market. Coffee is shipped to New York

SCALE OF QUOTATION RELATIONSHIP

BRAZILIAN COFFEE — NOT SANTOS Type	SANTOS COFFEE Type	OTHER KINDS — NOT BRAZILIAN Type
No. 1 — 180 points above	No. 1 — 260 points above	No. 1 — 300 points above
No. 2 — 150 points above	No. 2 — 230 points above	No. 2 — 250 points above
No. 3 — 120 points above	No. 3 — 200 points above	No. 3 — 200 points above
No. 4 — 90 points above	No. 4 — 150 points above	No. 4 — 150 points above
No. 5 — 60 points above	No. 5 — 100 points above	No. 5 — 100 points above
No. 6 — 30 points above	No. 6 — 50 points above	No. 6 — 50 points above
No. 7 — Basis	No. 7 — Basis	No. 7 — Basis
No. 8 — 50 points below	No. 8 — 50 points below	No. 8 — 50 points below

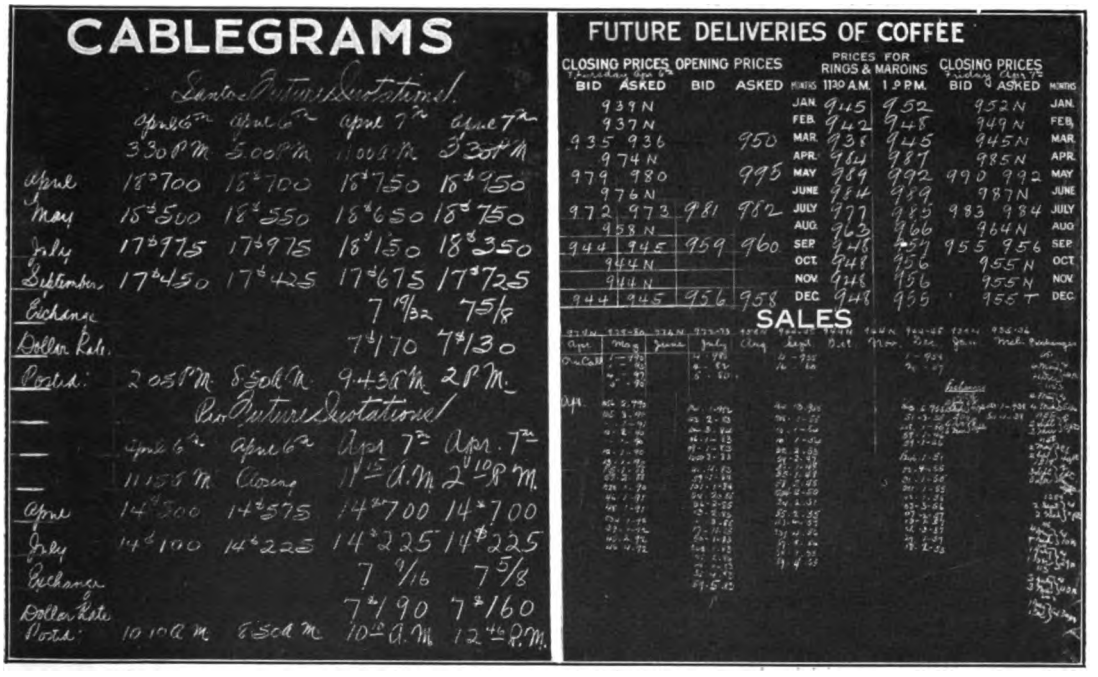
A point is the hundredth part of a cent

either on a consignment basis and sold for a commission, or it may have been bought in the shipping port and be already the property of an importer. When shipped on consignment, a wholesaler usually buys on the in-store contract, which provides that the purchaser must take delivery at the warehouse, though he is generally given a month's storage privilege before removal of the coffee. The practise among New York importers at present is to buy coffee on either the basis of F. O. B. delivery steamer at loading port, or delivery C. & F. (cost and freight), or C. I. F. (cost, insurance, and freight), port of destination. Payment is made by letter of credit drawn on a New York or London bank, entitling the exporter to draw at ninety days' sight against the shipping documents, so that the shipment will be in the hands of the purchaser long before the draft is made. Frequently a jobber acts as his own importer of Brazil coffee, buying direct from the exporter without utilizing the agency of a broker or a regular importing firm.

Brazil coffee is bought with the stipulation that differences between samples and the coffee actually delivered may be adjusted either on "Brazil grading," "half difference," or "full difference"; and with the further provision that, if the delivery is a full type higher or lower than specified in the contract, the entire shipment may be rejected. Under the "Brazil grading" provision, the buyer must accept delivery if the coffee is better than the next lower type, even though not up to the type ordered; and if the coffee is of a higher type than contracted for, he need not pay premium for it. In buying on the "half difference" or "full difference" basis, the buyer is entitled to payment for half the difference or the full difference, respectively, for any undergrading, or must pay the seller accordingly if there is any overgrading. When a buyer specifies special features of description, in addition to type, some sellers protect themselves against claims for difference on this score by inserting in the contract a clause to the effect that the description is given in good faith, but is not guaranteed by the seller.

How the New York Exchange Functions

When the New York Coffee Exchange was incorporated in 1881, its charter stated



TWO OF THE COFFEE EXCHANGE BLACKBOARDS

The one on the right is a record of transactions in the coffee pit. As soon as a trade is made, it is noted in the proper column on the lower part, the entry showing the time of the transaction, the number of "250-pound bag lots," and the price. The left-hand board gives Santos and Rio future quotations. For a detailed description of these and other exchange quotation boards, see page 457

its purposes to be "to provide, regulate and maintain a suitable building, room or rooms for the purchase and sales of coffees and other similar grocery articles in the city of New York, to adjust controversies between members, to inculcate and establish just and equitable principles in the trade, to establish and maintain uniformity in its rules, regulations and usages, to adopt standards of classification, to acquire, preserve and disseminate useful and valuable business information, and generally to promote the above mentioned trade in the city of New York, increase its amount, and augment the facilities with which it may be conducted.

In the promotion of trade at New York the Exchange has been highly successful. From time to time it has been criticized; and, more than once, coffee traders in the East and in the West have raised a question as to its value to non-speculating members. There are those who believe it serves a useful purpose, and others who call it a huge pool room. To say that, on the whole, it is not of benefit to the trade would be untrue. As one of its champions pointed out in 1914, when it shut down for a period of four months on account of the World War:

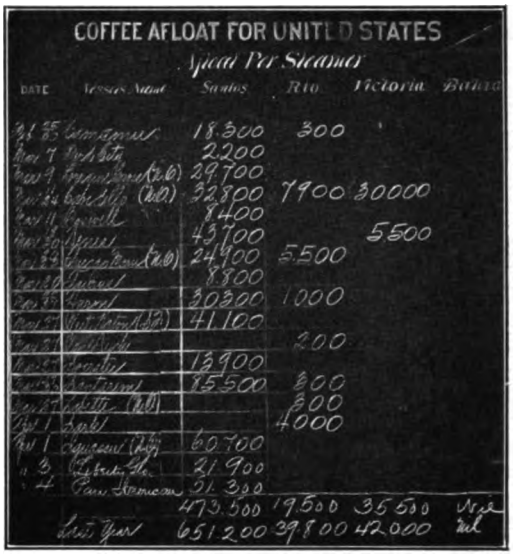
The ability to discount the future is a necessity, and demands the facilities that a unit of centralization like the Exchange affords. There is no difference between a purchase of coffee and one of a future month on options.

The experience gained here and abroad demonstrates that any check placed upon such dealings is detrimental, with far-reaching effects upon the whole body of the trade. Unquestionably the Exchange is a powerful factor as a regulator of extremes in the market.

The experience gained in Germany, where an embargo was placed upon transactions in futures, is illuminating. The disastrous effects were so plain that the authorities were forced to abandon their objections and permit a resumption of the business along the old lines.

But a good thing can be abused, and the opportunity to gamble in options availed of by so many is the increment that disturbs the legitimacy of the market and creates the opposition to the whole proposition. When the Exchange is ready to insist that every transaction in futures must be a legitimate one, and that every trader under its jurisdiction using the facilities of the Exchange is made to realize that any operations that are purely of a gambling nature will subject him to severe discipline, then the Coffee Exchange will begin to stem the tide of an ever-growing opposition by the general public.

The New York State legislative committee on speculations in securities and commodities had the following to say on the Coffee Exchange in its report to Governor Charles E. Hughes in 1909:



THE "COFFEE AFLOAT" BLACKBOARD

It [the Coffee Exchange] was established in order to supply a daily market where coffee could be bought and sold and to fix quotations therefor, in distinction from the former method of alternate glut and scarcity, with wide variations in price — in short, to create stability and certainty in trading in an important article of commerce. This it has accomplished; and it has made New York the most important primary coffee market in the United States. But there has been recently introduced a non-commercial factor known as "valorization," a governmental scheme of Brazil, by which the public treasury has assumed to purchase and hold a certain percentage of the coffee grown there, in order to prevent a decline of the price. This has created abnormal conditions in the coffee trade.

All transactions must be reported by the seller to the superintendent of the Exchange, with an exact statement of the time and terms of delivery. The record shows that the average annual sales in the past five years have been in excess of 16,000,000 bags of 130 pounds each.

Contracts may be transferred or offset by voluntary clearings by groups of members. There is no general clearing system.[2] There is a commendable rule providing that, in case of a "corner," the officials may fix a settlement price for contracts to avoid disastrous failures.

The original initiation fee was $250. Seats on the Exchange once sold for as low as $110. In January, 1916, there was a sale at $3,000; in October, 1916, there was

[2] Since changed. There is now a Clearing Association.

a sale for $5,000; in April, 1921, three seats were sold for $5,500 each; but the record price of $8,600 was paid in 1919. Seats are now (1922) worth about $6,000.

The Exchange includes in its membership 323 brokers, importers, dealers, and roasters. Membership is passed upon by a committee on membership; but any one twenty-one years old, resident or non-resident, of good character and commercial standing, is eligible when proposed and seconded by Exchange members. The committee refers the application with its recommendation to the board of managers, which takes a ballot. The adverse vote of one-third of all votes cast rejects.

The Exchange elects annually a president, a vice-president, and a treasurer, who perform the usual duties of Exchange officers. The real governing body is the board of managers, consisting of the president, vice-president, treasurer, and twelve other members. This governing board, meeting monthly, appoints the necessary subordinate officers and employees, and fixes their compensation, and may "summon before them any officer or member for any purpose whatsoever." It appoints the secretary of the Exchange from among its own number, a superintendent of the Exchange, and the numerous committees which are in active charge of specified activities. It also licenses the necessary coffee graders, warehousemen, weighmasters, and samplers of the Exchange.

A brief discussion of the duties of the superintendent and the various committees will help to explain the methods of the Exchange market. The superintendent, under the direction of the board of managers, has charge of the details of its work and of that of the various committees. He keeps all the books and documents of the Exchange; collects and pays over to the treasurer all moneys due the Exchange not otherwise provided for; receives, deposits, and pays over all margins on coffee contracts; has active charge of the Exchange rooms and the bulletin board; and manages and appoints, with the consent of the board of managers, the assistants needed to perform the details of the work under his charge.

One of the functions of the Exchange is to grade and to classify coffee, in which it takes every possible precaution. The rules provide for eight standard grades; and only licensed graders are permitted to pass upon the product handled on the Exchange. There are twenty-five of these graders; one of whom is appointed as a supervisor of types, to provide fresh standards and to "maintain them as nearly as possible on an equality." When these standards are approved by the board and the Exchange, they remain in force for a year.

When coffee is received at a licensed warehouse, two official graders are chosen, one by the buyer and one by the seller. These graders receive four cents a bag if employed by a member; and eight cents a bag, if employed by a non-member.

If the graders disagree, their differences are referred to the board of coffee arbitrators, consisting of ten experts appointed by the board of managers. The superintendent selects by lot three of these arbitrators, who decide on the basis of the samples submitted, but will not make a decision lowering the grade below that of the lowest submitted nor higher than the highest. If the disputants do not change the grading to come within the arbitrators' findings, the samples are sent to the entire board of arbitrators, exclusive of those who may have been the original graders, and final decision is made by majority vote. As soon as the coffee is graded, a certificate is issued stating the grades, and bearing the signatures of the superintendent and graders. This certificate is conclusive evidence of the grade as far as the parties involved are concerned, for the subsequent twelve months. The buyer receives the original, and the seller a duplicate.

The rules provide that weights decided upon at the initial delivery are good during the life of the grading certificate for re-delivery, with definite allowances to the receiver, on re-delivery, of a quarter of a pound a bag a month, instead of having to re-weigh and re-sample for every separate delivery, as formerly.

As claims and trade controversies occasionally arise, the Exchange has provided means for their peaceful settlement. The board of managers elects annually an arbitration committee of five members, who swear to decide disputes fairly. This is the only committee on the Exchange that has power to adjudicate disputes between members and non-members; and its services must be sought by the disputants, who

must agree to abide by its decision. An adjudication committee of seven is annually chosen from the membership by the managers, to adjust all claims and controversies between members arising out of any merchandise transaction, "if notice in writing of such claim or controversy, and of the intention to demand an adjudication thereon, be served by either party thereto within ten days from the ascertainment thereof."

Within three days of the serving of this notice, each disputant selects an Exchange member as his adjudicator; and these two name the third, who must be a member of the adjudicating committee. Even this decision may be appealed to the board of managers, which, if it finds the grounds of appeal good (as decided by majority vote), appoints an appeal committee of five, of whom three must be members of the board. This last committee's decision is final. No new testimony bearing on the case may be introduced after the case has been closed by the adjudicators. Arbitration is voluntary with both parties; while adjudication is compulsory upon the application of either.

Another committee of trade importance is the spot quotation committee of five Exchange members. Each day at two o'clock, except on Saturday, when it meets at 11:45, this committee by a majority vote establishes the official daily market quotation of No. 7 coffee. There is likewise a committee on quotations of futures. This committee of five meets daily "immediately after the first call and at the close of the Exchange and reports to the superintendent the tone and price of the contract market, to be posted on the blackboard and transmitted to other Exchanges and commercial bodies."

A committee of five on trade and statistics has the important function of reporting to the board as to regulations for the "purchase, sale, transportation and custody of merchandise," and it attempts to establish uniformity in such matters between different markets. It has charge also of "all matters pertaining to the supply of newspapers, market reports, telegraphic and statistical information for the use of the Exchange. In the early 80's the Exchange abolished the old method of keeping coffee statistics, and the basis then adopted has since been accepted by all the large coffee markets of the world."

The minimum rates of commission on coffee "per contract of 250 bags, for members of the Exchange residing in the United States, are based upon a price" as follows, quoting from the Exchange bylaws adopted June 8, 1920:

COFFEE EXCHANGE COMMISSION RATES
(Per contract of 250 bags)

	Commission for buying or selling	Floor brokerage for buying or selling
Below 10 cents.....	$6.25	$1.50
10 cents up to 19.99 cents.	7.50	1.75
20 cents and above.....	10.00	2.00

For non-members residing within the United States, double the above rates of commission shall be charged.

For members and non-members residing outside of the United States a commission of $2.50 shall be charged in addition to the above rates.

Whenever before thirty minutes after the close of the exchange a member gives to another member for clearance purchases and sales of contracts corresponding in all respects except as to price, made during the day by himself or for his account *when present on the floor* of the Exchange, a charge for each contract shall be made equal to the corresponding floor brokerage rate for buying and selling, in addition to any floor brokerage incurred.

Members procuring business for other members may, by agreement, be entitled to one-half the commission rates for non-members prescribed in this Section, less the corresponding brokerage charge, whether paid or not.

When a transferable notice is given or received by a customer in fulfillment of a contract the brokerage in that case shall be not less than one-half of the corresponding buying or selling commission prescribed in Section 103.

Other committees are the finance committee (two) to audit bills and claims against the Exchange, to direct deposits and investments, and to audit the monthly and yearly accounts of the treasurer; a law committee (three), to deal with matters of legislation; a membership and floor committee (five); and a nominating committee (five). Organized as above outlined, and with a well established code of trade rules, the Exchange annually transacts a large number of sales in a business-like way.

There is considerable trading in future contracts; and a standard form has been adopted by the Exchange. No future contracts are valid unless they are made in the following form:

BRAZILIAN COFFEE — NOT SANTOS

Office of.....
New York.....19....

Sold for M.....
To M.....

Thirty-two thousand five hundred pounds in about 250 bags coffee, growth of North, South

or Central America, West Indies or East Indies, excepting coffee known as "Robusta," and also any coffee of new or unknown growth, deliverable from licensed warehouse in the port of New York, between the first and last days of..... next, inclusive. The delivery within such time to be at seller's option, upon a notice to buyer of either five, six or seven days, as may be prescribed by the trade rules. The coffee to be of any grade, from No. 8 to No. 1 inclusive (no coffee to grade below No. 8) provided the average grade of Brazilian coffees shall not be above No. 3. Nothing in this contract, however, shall be construed as prohibiting a delivery averaging above No. 3 at the No. 3 grade. At the rate of.....cents per pound for No. 7, with additions or deductions for other grades according to the rates of the New York Coffee and Sugar Exchange, Inc., existing on the afternoon of the day previous to the date of the notice of delivery. Either party to have the right to call for margins as the variations of the market for like deliveries may warrant, which margins shall be kept good.

This contract is made in view of, and in all respect subject to the rules and conditions established by the New York Coffee and Sugar Exchange, Inc., and in full accordance with section 102 of the by-laws.

.....
Brokers

Across the face is the following:

For and in consideration of one dollar to .....in hand paid, receipt whereof is hereby acknowledged, ... accept this contract with all its obligations and conditions.

All deliveries on such future contracts must be made from licensed warehouses. There is a separate "to arrive contract"; but this likewise requires delivery at a licensed warehouse, unless the buyer and the seller have a mutual understanding to deliver the coffee from dock or ex-ship. Margins to protect the contract may be called for by either party. The largest deposit for margins was made in 1904, when $22,661,710 was deposited with the superintendent as required by the Exchange rules.

The basic grade in a future sale is No. 7; but variations are provided as follows: 30 points for Rio, Victoria, and Bahia of all grades between 7 and 1, and of 50 points between 7 and 8; 50 points is allowed on Santos and all other coffees except between grades 1 and 2 and 2 and 3 Santos, which are allowed 30 points. Thus the buyer and the seller when entering upon a transaction know exactly what the difference will be between the standard No. 7 and the coffee that can be delivered. The right to deliver any grade in a future transaction has done much to lessen the probability of corners in coffee; but this protection is further given by the stringent rule that the maximum fluctuations on the Exchange can be only two cents a pound on coffee in one day and one cent on sugar. If greater changes should threaten, the Exchange operations would automatically cease.

False or fictitious sales are prohibited, and all contracts must be reported to the superintendent. All contracts are binding and call for actual delivery.

The future contract, besides being used for the delivery of coffee during stated months in the future at a given price, is also used for hedging purposes. As in the grain and cotton markets, dealers protect themselves against price fluctuations by hedging in the future market. Importers, for instance, when purchasing coffee abroad, frequently sell an equal amount for future delivery on the Exchange. When the time for delivery arrives, it is simply a question of calculation of the market conditions whether it is more advantageous to repurchase the sales made as a hedge, or as a kind of insurance to protect themselves against loss, and free the coffee so engaged, or to make delivery of the coffee as it comes in.

The board of managers has power to close the Exchange or to suspend trading on such days or parts of days as would in their judgment be for the Exchange's best interest.

The Clearing Association is a recent outgrowth of the Exchange, and is composed exclusively of Exchange members. Every member has to bring his contracts up to market closing every night, either by making a deposit with the Association to cover his balances, or by withdrawing in case he should be over. Members deposit $15,000 at the time of joining as a guaranty fund; and if the surplus is not sufficient to take care of balances, the bylaws provide for the levying of assessments.

The daily quotations on the coffee exchanges of New York, Havre, and (before the war) of Hamburg, determined to a large extent the price of green coffee the world over. The prices prevailing on the New York Coffee and Sugar Exchange are studied by coffee traders in all countries, the fluctuations being reflected in foreign markets as the reports come from the United States. Quotations are cabled from one great market to another; and as each must heed those of the others to some extent, the coffee trade thus obtains a world

price, and the effect on supply and demand is universal rather than local, as would be the case if quotations were not exchanged.

In 1921 the Exchange adopted an amendment to the trade rules, and abolished the one day transferable notice for both coffee and sugar.

Foreign Coffee Quotations

Brazil coffee cable quotations are the market prices, in Rio or Santos, of ten kilograms of coffee, the price being stated in milreis, the monetary unit of Brazil money. The basic grade of coffee at Rio is the No. 7 of the New York Coffee Exchange; and at Santos, the international standard of good average ("g. a.") Santos. One kilogram (often written kilo, or abbreviated to K.) is equal to two and one-fifth pounds; and the ten-kilogram standard of quantity is, therefore, equivalent to twenty-two pounds, or just one-sixth of a standard Brazil bag.

The money value is not so simple, since Brazilian paper currency is unstable; and the milreis quotation means nothing unless it is considered in connection with the rate of exchange for the same day, i. e., the current gold value of the milreis. This gold value is always given with the daily quotations from Brazil, and is expressed in British pence. The par value of the milreis (1000 reis) is 54.6 cents (gold) of United States money; but its present actual value is only about 15 cents, and it has been as low as 11¼ cents. Our dollar sign is used to denote milreis, placing it after the whole number, and before the fractional part expressed in one-thousandths. Thus, 8¼ milreis would be written 8$250 RS.

Suppose, for example, a Rio quotation is given at 8$400, with exchange at 7½ d. This means that 22 pounds of coffee have a gold value of 63 British pence (8.4 x 7½ = 63.0), or 5/3, as the Englishman would write it, which is equal to $1.27½, making the coffee worth 5.8 cents per pound. Of course the person familiar with Brazil quotations will not need to make this reduction to the pound-cent term in order to understand the figures. They will have a proper relative meaning to him in their original form; and it must not be overlooked that it is in this form only that they express correctly the value of the coffee in Brazil. It may make a great difference to the Brazilian planter or exporter whether an increased gold value of his coffee arises through a higher milreis bid or an appreciated exchange, simply on account of local currency considerations. That is to say, the purchasing power of a milreis in Brazil will not necessarily vary exactly as the rate of exchange on London.

London quotations are made in shillings and pence, on one hundredweight (cwt) of coffee. This "cwt" is not 100 pounds but 112 pounds, one twentieth of the English ton (our long ton) of 2,240 pounds. And in all English coffee statistics the coffee quantities are expressed in this ton. A London quotation of 30/9 (30 shillings and 9 pence) for example, is equivalent to $7.44 for 112 pounds of coffee, or 6.64 cents per pound at the normal rate of exchange, $4.80 to $4.86 the pound sterling.

At Havre, the coffee price is given in francs, on a quantity of 50 kilograms. This is 110 pounds and almost as much, therefore, as the British cwt. In normal times the franc is equal to 19.3 cents. A French quotation of 37½, for instance, means, therefore, $7.19 for 110 pounds of coffee, or 6.53 cents per pound.

The Hamburg quotation (formerly from Brazil per fifty kilos) is made on one pound German, equal to ½ kilogram, and is expressed in pfennigs. One pfennig is one-hundredth of a mark, and the mark once was equal to 23.8 cents. A German quotation of, say, 31, means, therefore, 7.38 cents (31 x .238 = 7.378) for 1.1 pounds, or 6.71 cents per pound.

Three Kinds of Brokers

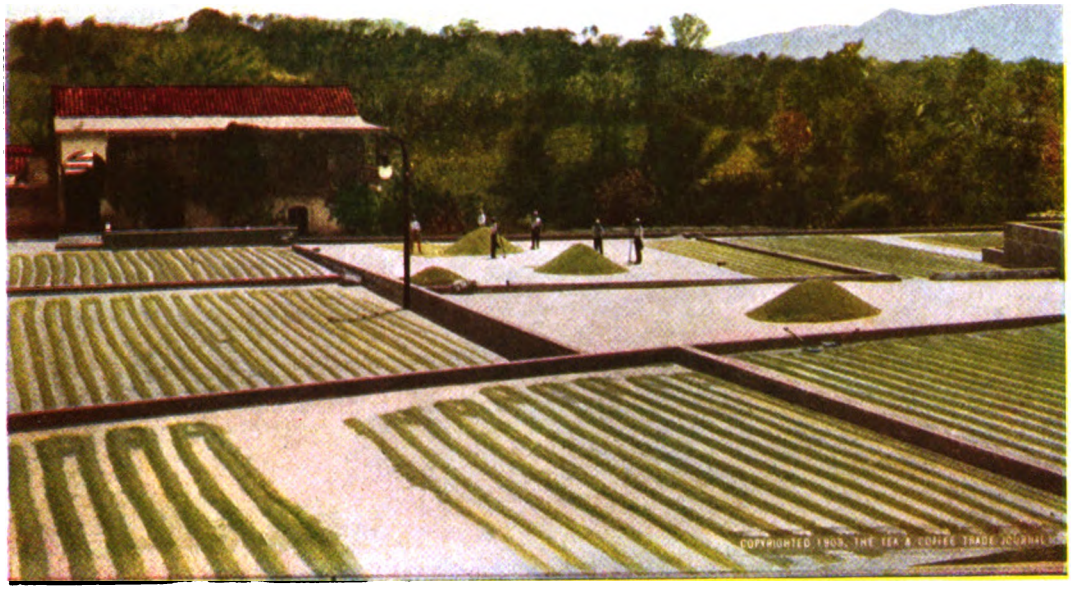
In the coffee trade there are three kinds of brokers — floor, spot, and cost and freight.

Floor brokers are those who buy and sell options on the Coffee Exchange for a fixed consideration per lot of 250 bags. The coffee commission rate put into effect June 8, 1920, for round term (buying and selling) by the New York Coffee Exchange was as follows:

COMMISSION RATE ON 250 BAGS
(For Round Term — Buying and Selling)

	Up to 9.99c per lb.	10c to 19.99c per lb.	20c & up per lb.
Members	$12.50	$15.00	$20.00
Non-members	25.00	30.00	40.00
Foreign members	17.50	20.00	25.00
Foreign non-members	30.00	35.00	45.00
Floor brokerage—			
Buying or selling...	1.50	1.75	2.00

There is at present (1922) a stamp tax of two cents on each hundred dollars value, or fraction thereof, figured on each separate lot.



SUN-CURING THE WASHED GREEN BEANS ON CEMENT DRYING PATIOS

NEAR VIEW OF HEAVILY LADEN TREES READY FOR THE PICKERS

TYPICAL COFFEE SCENES IN COSTA RICA

Spot brokers are those who deal in actual coffee, selling from jobber to jobber, or representing out-of-town houses; the seller paying a commission of about fifteen cents a bag in small lots, and half of one percent in large lots.

Cost and freight brokers represent Brazilian accounts, and generally receive a brokerage of one and one-quarter percent. On out-of-town business, they usually split the commission with the out-of-town or "local" brokers. The out-of-town brokers sometimes, however, deal direct with the importer. All brokers except floor brokers are sometimes called "street brokers." Most of the large New York, New Orleans, and San Francisco brokerage houses also do a commission business, handling one or more Brazilian or other coffee-producing-country accounts.

Important Rulings Affecting Coffee Trading

The United States have no coffee law as they have a tea law — prescribing "purity, quality and fitness for consumption" — but buyers and sellers of green coffees are required to observe certain well defined federal rules and regulations relating specifically to coffee. Up to the year 1906, when the Pure Food and Drugs Act became law, the green coffee trade was practically unhampered; and several irregularities developed, calling into existence federal laws that were designed to protect the consumer against trade abuses, and at the same time to raise the standards of coffee trading.

Under these regulations it is illegal to import into this country a coffee that grades below a No. 8 Exchange type, which generally contains a large proportion of sour or damaged beans, known in the trade as "black jack," or damaged coffee, as found in "skimmings." "Black jack" is a term applied to coffee that has turned black during the process of curing, or in the hold of a ship during transportation; or it may be due to a blighting disease.

Another ruling is intended to prevent the sale of artificially "sweated" coffee, which has been submitted to a steaming process to give the beans the extra-brown appearance of high grade East Indian and Mocha coffees which have been naturally "sweated" in the holds of sailing vessels during the long journey to American ports. Up to the time that the Pure Food and Drugs Act went into effect, artificial "sweating" was resorted to by some coffee firms; and out of that practise grew a suit [3] that resulted in a federal court decision sustaining the Pure Food Act, and classifying the practise as adulteration and misbranding.

The Act also is intended to prevent the sale of coffees under trade names that do not properly belong to them. For example, only coffees grown on the island of Java can properly be labeled and sold as Javas; coffees from Sumatra, Timor, etc., must be sold under their respective names. Food Inspection Decision No. 82, which limited the use of the term Java to coffee grown on the island of Java, was sustained in a service and regulatory announcement issued in January, 1916. Likewise the name Mocha may be used only for coffees of Arabia. Before the pure-food law was enacted, it was frequently the custom to mix Bourbon Santos with Mocha and to sell the blend as Mocha. Also, Abyssinian coffees were generally known in the trade as Longberry Mocha, or just straight Mocha; and Sumatra growths were practically always sold as Javas. Traders used the names of Mocha and Java because of the high value placed upon these coffees by consumers, who, before Brazil dominated the market, had practically no other names for coffee.

One of the most celebrated coffee cases under the Pure Food Act was tried in Chicago, February, 1912. The question was, whether in view of the long-standing trade custom, it was still proper to call an Abyssinian coffee (Longberry Mocha) Mocha. The defendant was charged with misbranding, because he sold as Java and Mocha a coffee containing Abyssinian coffee. The court decided that the product should be called Abyssinian Mocha; [4] but since then, general acceptance has obtained of the government's viewpoint as expressed in F. I. D. No. 91, which was that only coffee grown in the province of Yemen in Arabia could properly be known as Mocha coffee.

Another important ruling, concerning coffee buyers and sellers, prohibits the importation of green coffees coated with lead chromate, Prussian blue, and other substances, to give the beans a more stylish appearance than they have normally. Such "polished" coffees find great favor in the

[3] *Tea and Coffee Trade Jour.*, 1911 (vol. xx: no. 4: p. 284).

[4] *Tea and Coffee Trade Jour.*, July, 1911 (vol. xxiii: no. 1; p. 28).

European markets, but are now denied admittance here.

The Board of Food and Drug Inspection decided in 1910 against a trade custom that had prevailed until then of calling Minas coffee Santos when shipped through Santos, instead of Rio.[5]

For years a practise obtained of re-bagging certain Central American growths in New York. In this way Bucaramangas frequently were transformed into Bogotas, Rios became Santos, Bahias and Victorias were sold as Rios, and the misbranding of peaberry was quite common. A celebrated case grew out of an attempt by a New York coffee importer and broker to continue one of these practises after the Pure Food Act made it a criminal offense. The defendants, who were found guilty of conspiracy, and who were fined three thousand dollars each, mixed, re-packed and sold under the name P. A. L. Bogota, a well known Colombian mark, eighty-four bags of washed Caracas coffee.[6]

After an exchange of views with the United States Board of Food and Drug Inspection, the New York Coffee Exchange decided that, after June 1, 1912, it would abolish all grades of coffee under the Exchange type No. 8.

The practise in Holland of grading Santos coffees — by selecting beans most like Java beans, and polishing and coloring them to add verisimilitude — known as "manipulated Java," became such a nuisance in 1912 that United States consuls refused to certify invoices to the United States unless accompanied by a declaration that the produce was "pure Java, neither mixed with other kinds nor counterfeited."

The United States Bureau of Chemistry ruled in February, 1921, that *Coffea robusta* could not be sold as Java coffee, or under any form of labeling which tended either directly or indirectly to create the impression that it was *Coffea arabica*, so long and favorably known as Java coffee. This was in line with the Department of Agriculture's previous definition that coffee was the seed of the *Coffea arabica* or *Coffea liberica*, and that Java coffee was *Coffea arabica* from Java. *Coffea robusta* was barred from deliveries on the New York Coffee Exchange in 1912.

During the greater part of the year 1918, the United States government assumed virtually full control of coffee trading. It was a war-time measure, and was intended to prevent speculation in coffee contracts and freight rates, to cut down the number of vessels carrying coffee to this country so as to provide more ships for transporting food and soldiers to Europe, and to put the coffee merchants on rations during the stress of war. On February 4, 1918, importers and dealers were placed under license; and two days later, rules were issued through the Food Administration fixing the maximum price for coffee for the spot month in the "futures" markets at eight and a half cents, prohibiting dealers from taking more than normal pre-war profits, or holding supplies in excess of ninety days' requirements, and greatly limiting re-sales. On May 8, the United States Shipping Board fixed the "official" freight rate from Rio de Janeiro to New York at one dollar and fifty cents per bag, which, without control, had risen to as high as four dollars and more, as compared with the ordinary rate of thirty-five cents before the war. On January 12, 1919, two months after the armistice was signed, the rules were withdrawn, and the coffee trade was left to carry on its business under its own direction.

Some Well Known Green Coffee Marks

Practically every bag of good quality green coffee is imprinted with a brand which indicates by whom it was shipped. These imprints are known in the trade as "green coffee marks." Many of them, through long usage, have become celebrated in international trade. One of the most famous was HLOG. This stood for "Heaven's Light Our Guide," and was owned by John O'Donohue's Sons. For many years it was used on Mocha coffee, but it is now out of existence. Other well-known Mocha marks are M R (Maurice Ries) with the figure of a camel, a star, or deer's head between the letters; L F or L B (Livierato Frères); C F or C B (Caracanda Frères).

Bogota marks includes PAL (in triangle) Bogota (P. A. Lopez & Co.); Camelia; Pinzon & Co.; Salazar; A O L (in triangle) Bogota; and Carmencita Manizales Excelso (Steinwender, Stoffregen & Co.).

Among the best known Medellin marks

[5] *Tea and Coffee Trade Jour.*, Nov., 1910 (vol. xix: no. 5: p. 380).

[6] *Tea and Coffee Trade Jour.*, Nov., 1914 (vol. xxv; no. 5: p. 397).

SOME WELL KNOWN GREEN-COFFEE MARKS

are FAC & H (F. A. Correa & Sons); PEC & C (Pedro Estrado Co.); LMT & C (Louis M. Torro & Co.); A & C (A. Angel & Co.); E C S Medellin Excelso (Eppens, Smith Co.); Balzacbro Medellin Excelso (Balzac Bros.); La Rambla (Banco Lopez); and Don Carlos Medellin Excelso (Steinwender, Stoffregen & Co.).

Caracas marks show J P P & H (Juan Pablo Perez & Sons); HLB & C (H. L. Boulton & Co.); FST & C (Filipe S. Toledo & Co.); JLG (J. L. Garrondona); and many others. Kolster (Kolster & Co.) is a well known Puerto Cabello mark.

Maracaibos bear numerous marks, chief among which are: M & C (Menda & Co.); Cogollo (Cogollo & Co.); Fossi (Fossi & Co.); B M & C (Breur, Moller & Co.); B & C (Blohm & Co.); FST & C (Filipe S. Toledo & Co.); V D R & C (Van Dessel, Rodo & Co.); and J E C & C over R G E (J. E. Carret & Co.).

A prominent Mexican mark is P A N (Rafael del Castillo & Co.).

Brazil coffee is usually marked merely with the initials of the firm or bank financing the shipment. Some representative Brazilian marks are: Aronco (in rectangle) Brazil; J A & Co (in rectangle) Brazil Rosebud; J A & Co (in rectangle) Brazil Bourbona — all used by J. Aron & Company; S S C (in circle) Rio; S S C (in triangle) Santos; both used by Steinwender, Stoffregen & Co.; Sions M/M Bourbns (Sion & Co.); and Nossack V S S C (in swastika), used by Nossack & Co.

There are hundreds of other marks. In most countries they change so often that one rarely stands out above the rest.

CHAPTER XXIV

GREEN AND ROASTED COFFEE CHARACTERISTICS

The trade values, bean characteristics, and cup merits of the leading coffees of commerce, with a "Complete Reference Table of the Principal Kinds of Coffee Grown in the World" — Appearance, aroma, and flavor in cup-testing — How experts test coffee — A typical sample-roasting and cup-testing outfit

MORE than a hundred different kinds of coffee are bought and sold in the United States. All of them belong to the same botanical genus, and practically all to the same species, the *Coffea arabica*; but each has distinguishing characteristics which determine its commercial value in the eyes of the importers, roasters, and distributers.

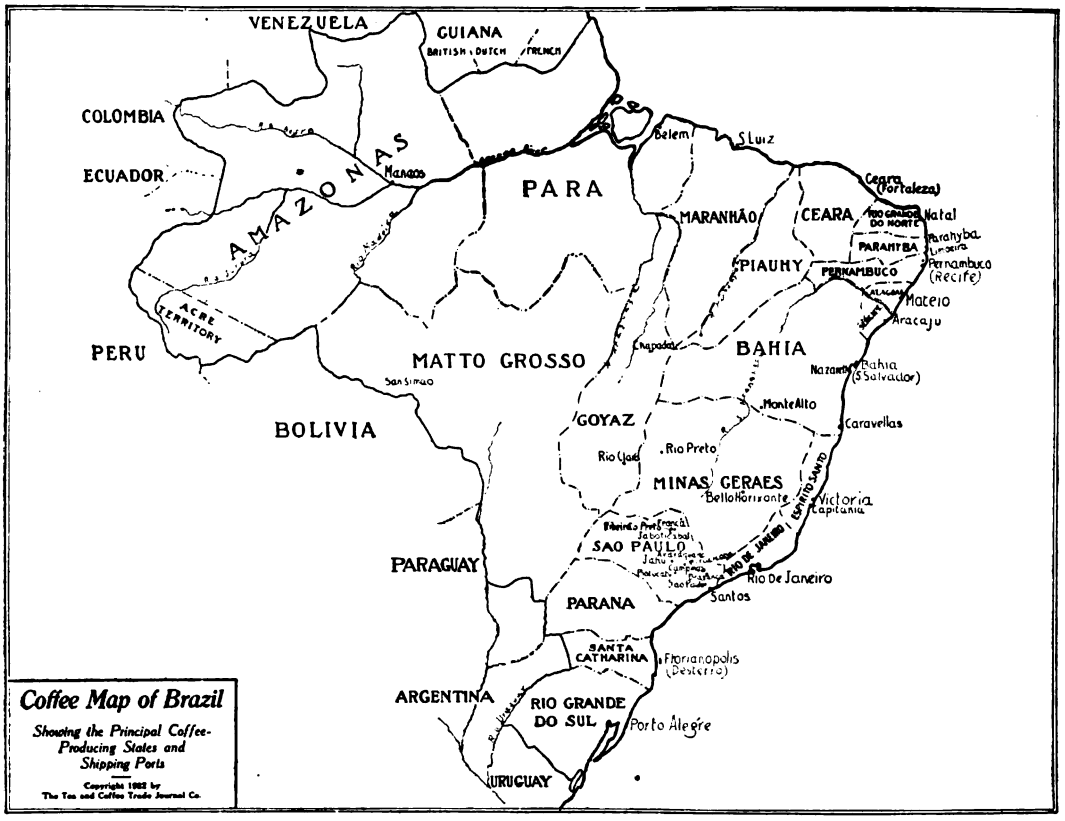
The American trade deals almost exclusively in *Coffea arabica*, although in the latter years of the World War increasing quantities of *robusta* and *liberica* growths were imported, largely because of the scarcity of Brazilian stocks and the improvement in the preparation methods, especially in the case of *robustas*. Considerable quantities of *robusta* grades were sold in the United States before 1912, but trading in them fell off when the New York Coffee and Sugar Exchange prohibited their delivery on Exchange contracts after March 1, 1912.

All coffees used in the United States are divided into two general groups, Brazils and Milds. Brazils comprise those coffees grown in São Paulo, Minas Geraes, Rio de Janeiro, Bahia, Victoria, and other Brazilian states. The Milds include all coffees grown elsewhere. In 1921 Brazils made up about three-fourths of the world's total consumption. They are regarded by American traders as the "price" coffees, while Milds are considered as the "quality" grades.

Brazil coffees are classified into four great groups, which bear the names of the ports through which they are exported; Santos, Rio, Victoria, and Bahia. Santos coffee is grown principally in the state of São Paulo; Rio, in the state of Rio de Janeiro and the state of Minas Geraes; Victoria, in the state of Espirito Santo; and Bahia in the state of Bahia. All of these groups are further subdivided according to their bean characteristics and the districts in which they are produced.

Brazil Coffee Characteristics

SANTOS. Santos coffees, considered as a whole, have the distinction of being the best grown in Brazil. Rios rank next, Victorias coming third in favor, and Bahias fourth. Of the Santos growths the best is that known in the trade as Bourbon, produced by trees grown from Mocha seed (*Coffea arabica*) brought originally from the French island colony of Bourbon (now Réunion) in the Indian Ocean. The true Bourbon is obtained from the first few crops of Mocha seed. After the third or fourth year of bearing, the fruit gradually changes in form, yielding in the sixth year the flat-shaped beans which are sold under the trade name of Flat Bean Santos. By that time, the coffee has lost most of its Bourbon characteristics. The true Bourbon of the first and second crops is a small bean, and resembles the Mocha, but makes a much handsomer roast with fewer "quakers".



The Bourbons grown in the Campinas district often have a red center.

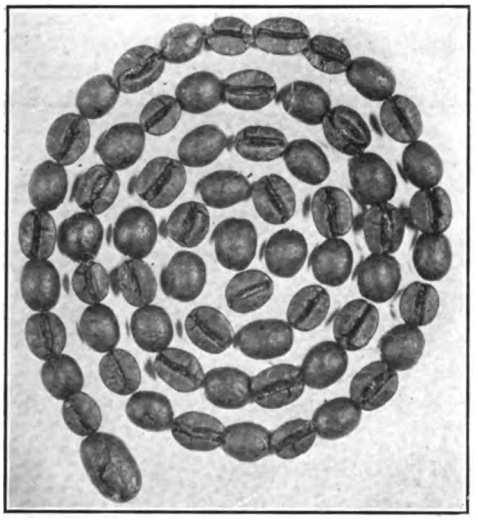
As regards flavor, a good Bourbon Santos is considered the best coffee for its price, and is the most satisfactory low-cost blending coffee to be obtained. It is used with practically any of the high-priced coffees to reduce the cost of the blend. When properly made, this coffee produces a drink that is smooth and palatable, without tang or special character, and is suitable to the average taste. When aged, Bourbon Santos decreases in acidity, and increases somewhat in size of bean.

The Santos coffee described as Flat Bean usually has a smooth surface, varying in size from small to large bean, and in color from a pale yellow to a pale green. The cup has a good and smooth body of neutral character, and the bean can be used straight or in a blend with practically any Mild coffee.

Another Santos growth, known in the trade as Harsh Santos, grows near the boundary between São Paulo and Minas Geraes. It often has some of the Rio characteristics, and commands a lower price than other Santos coffees.

Some trade authorities are of the opinion that Santos coffees are an exception to the rule that most green coffees improve with age. They argue that careful cup-testing will reveal that a new crop Santos is to be preferred to an old crop.

RIOS. Rio coffee is not generally liked in the United States, though in former years it had some following even in the better trade. The demand for all grades of Rios has been decreasing, Santos taking their place in the United States. Rio coffee has a peculiar, rank flavor. It has a heavy, pungent, and harsh taste which traders do not consider of value either in straight coffee or in blends. However, its low price recommends it to some packers, and it is often found in the cheapest brands of package coffees and also in many compounds. In color, the bean runs from light green to dark green; but when it is stored for any length of time — a common practise in the past — the color changes to a golden yellow; and the coffee is then known as



BOURBON SANTOS BEANS — ROASTED

golden Rio. The bean also expands with age.

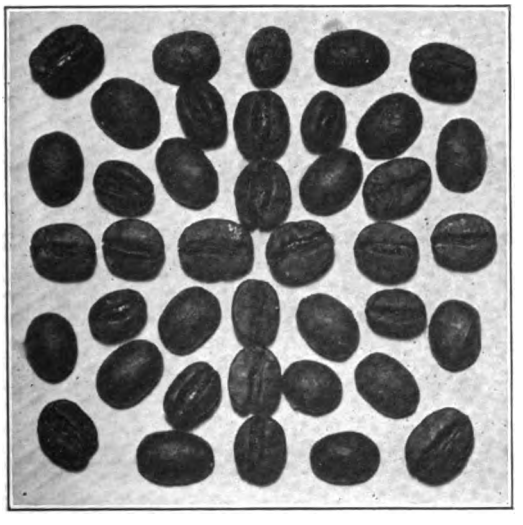
All Rio coffee is described by the name Rio; but the American trade recognizes eight different grades, designated by numerals from one to eight. These grades are determined by standards adopted by the New York Coffee and Sugar Exchange, and are classified by the number of imperfections found in the chops exported. No. 1 Rio contains no imperfections, such as black beans, shells, stones, broken beans, pods or immature beans ("quakers"). Such a chop is rarely found. No. 2 has six imperfections, No. 3 has thirteen, No. 4 has twenty-nine, No. 5 has sixty, No. 6 has one hundred and ten, No. 7 has two hundred, and No. 8 has about four hundred, although on the Exchange these last two are graded by standard types.

VICTORIAS. Up to about the year 1917, Victoria coffees were held in even less favor by American traders than were Rios. As a rule the bean was large and punky, of a dark brown or dingy color, and its flavor was described as muddy. Then, the coffee growers began to introduce modern machinery for handling the crops, with the result that the character of the produce has been much improved, and the demand for it has been steadily growing. Many roasters who formerly used Rios straight for their

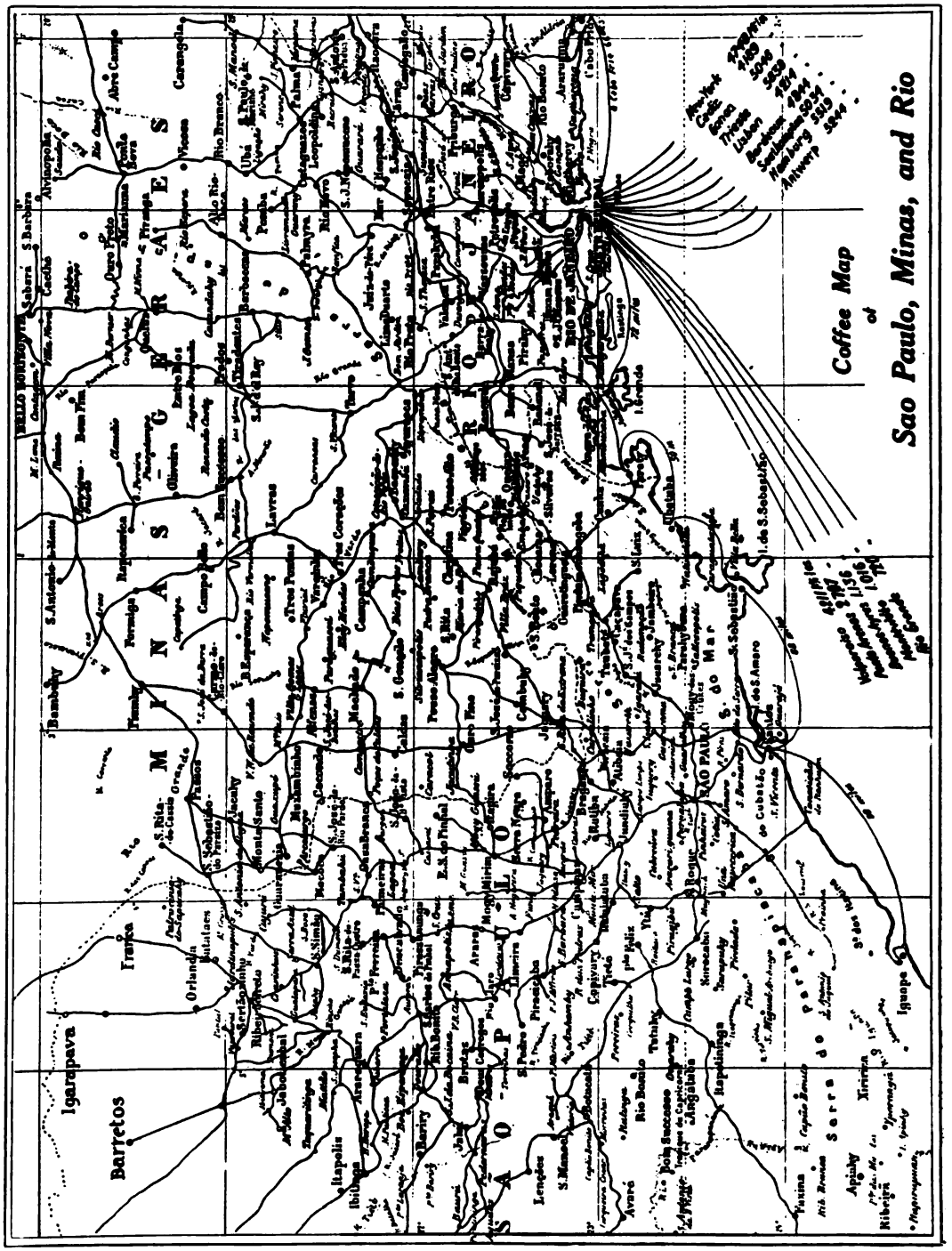
RIO BEANS — ROASTED

lower grades, have changed to Victorias, not only to improve the appearance of the roast, but to soften the harsh drinking qualities of the low-grade Rios.

BAHIAS. Until recent years Bahia coffee has been decidedly unpopular in the United States, largely because of its peculiar smoky flavor, due to drying the coffee by means of wood fires, instead of by the usual sun method. This practise has been abandoned; Bahia coffee has shown a marked improvement in quality; and importations into the United States have increased. The Bahia coffee produced in the Chapada district is considered to be the best of the group. The bean is light-colored and of fair size. Other types are Caravella and Nazareth, both of



FLAT AND BOURBON SANTOS BEANS — ROASTED


Coffee Map
of
Sao Paulo, Minas, and Rio
Barretos
Igarapava
Franca
Orlandia
Ribeirão Preto
Jaboticabal
Araraquara
Rio Claro
Limeira
Campinas
Jundiahy
Santos
São Paulo
Mogy Mirim
Mogy das Cruzes
Pinhal
Casa Branca
Santa Rita
Mogy Guassu
Amparo
Serra da Mantiqueira
Serra do Mar
Serra do Paranapiacaba
Iguape
Ribeira
Iporanga
Apiahy
Xiririca
Itapetininga
Sorocaba
Ipanema
Ibiuna
Itapolis
Avaré
Lençóes
Botucatu
Pirassununga
Rio Pardo
Thatuhy
Capivary
Tieté
Piracicaba
Rio Claro
Limeira
Araras
Descalvado
Pirassununga
Santa Rita
Mogy Mirim
Mogy das Cruzes
Jundiahy
Campinas
Amparo
Mogy Guassu
Casa Branca
Pinhal
Rio Claro
Araraquara
Jaboticabal
Ribeirão Preto
Orlandia
Franca
Igarapava
Barretos
Rio Grande
Rio Pardo
Rio Tieté
Rio Mogy Guassu
Rio Pardo
Rio Grande
Rio Paranapanema
Rio Ribeira
Rio Paraiba
Rio Parahyba
Rio Preto
Rio Pomba
Rio Muriahé
Rio Parahy

which are below the standards demanded by the majority of the American trade.

MARAGOGIPE. This is a variety of *Coffea arabica* first observed growing near the town of Maragogipe on All Saints Bay, county of Maragogipe, Bahia, Brazil, where it is called *Coffea indigena.* The green bean is of huge size, and varies in color from green to dingy brown. It is the largest of all coffee beans, and makes an elephantine roast, free from quakers, but woody and generally disagreeable in the cup. However, Dr. P. J. S. Cramer of the Netherlands government's experimental garden in Bangelan, Java, regards it very highly, referring to it as "the finest coffee known", and as having "a highly developed, splendid flavor." This coffee is now found in practically all the producing countries, and shows the characteristics of the other coffees produced in the same soil.

The Characteristics of Mild Coffees

Among the Mild coffees there is a much greater variation in characteristics than is found among the Brazilian growths. This is due to the differences in climate, altitude, and soil, as well as in the cultural, processing, storage, and transportation methods employed in the widely separated countries in which Milds are produced.

Mild coffees generally have more body, more acidity, and a much finer aroma than Brazils; and from the standpoint of quality they are far more desirable in the cup. As a rule they have also better appearance, or "style", both in the green and in the roast, due to the fact that greater care is exercised in picking and preparing the higher grades. Milds are important for blending purposes, most of them possessing distinctive individual characteristics, which increase their value as blending coffees.

Not All Coffees Improve with Age

Although it has long been held that green coffee improves with age, and there is little doubt that this is true in so far as roasting merits are concerned; the question has been raised among coffee experts as to whether age improves the drinking qualities of all coffees alike.

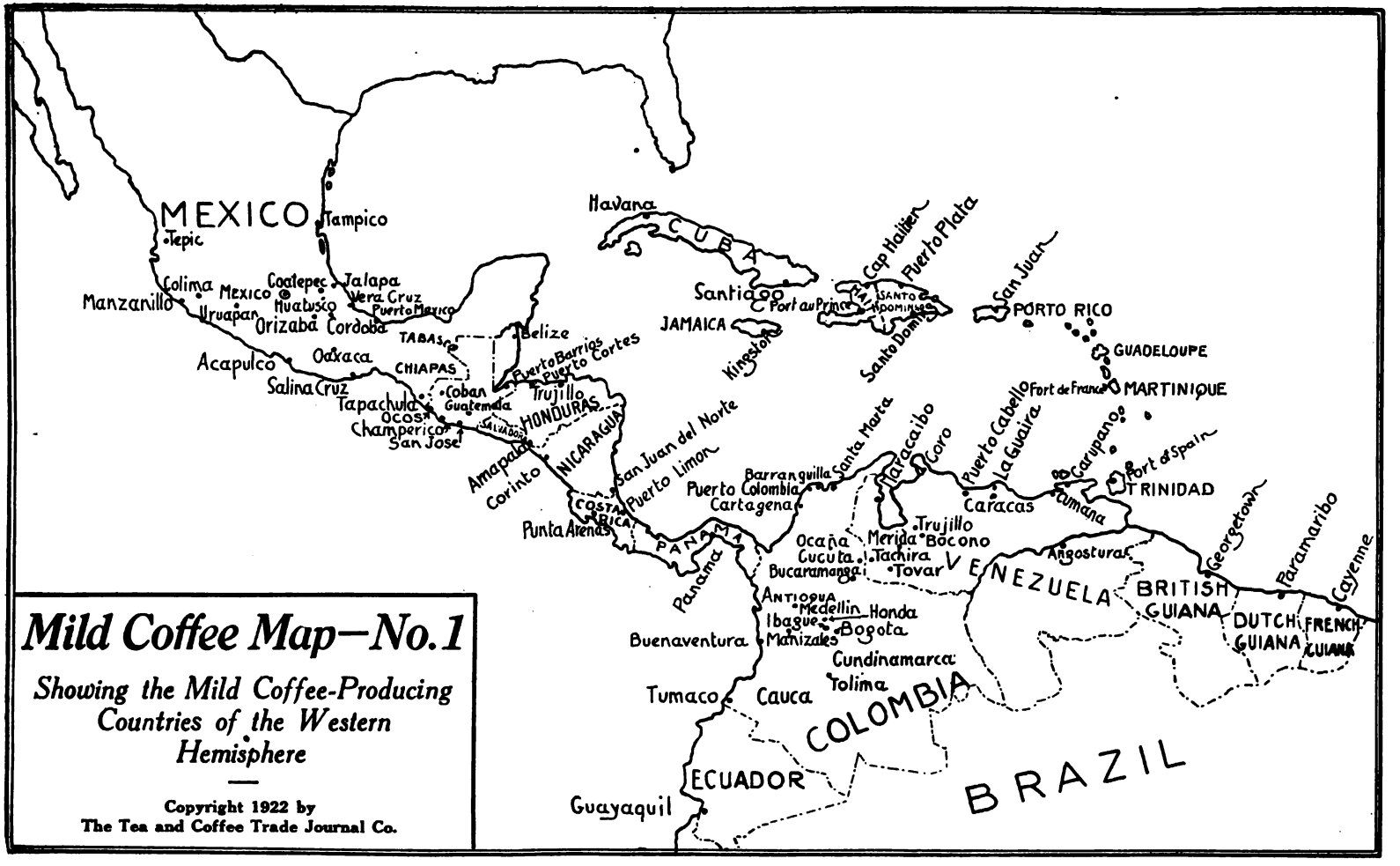
Rio coffees should improve with age, as they are naturally strong and earthy. Age might be expected to soften and to mellow them and others having like characteristics. If, however, the coffee is mild in cup quality in the first instance, then it may be asked if age does not weaken it so that in time it must become quite insipid. Several years ago, a New York coffee expert pointed out that this was what happened to Santos coffees. The new crop, he said, was always a more pleasant and enjoyable drink than the old crop, because it was a more pronounced mild coffee in the cup.

MEXICANS. Considering those coffees grown nearest the American market first, we come to the coffees of Mexico. All coffees grown in this republic are known as Mexicans. They are further divided according to the states and districts in which they are produced, and as to whether they are prepared according to the wet or the dry method. The types best known in the American market are Coatepec, Huatusco, Orizaba, Cordoba, Oaxaca, and Jalapa. The lesser known are the Uruapan, Michoacan, Colima, Chiapas, Triunfo, Tapachula, Sierra, Tabasco, Tampico, and Coatzacoalcos. Some of these are rarely seen in the markets of the United States.

The coffee most cultivated in Mexico is supposed to have come from Mocha seed. Of this species is the Oaxaca coffee, which is valued because of its sharp acidity and excellent flavor, two qualities that make it desirable for blending. The bean of the Sierra Oaxaca (common unwashed) is not large, nor is the appearance stylish. The Pluma Oaxaca (washed) coffee, however, is a fancy bean and good for blending purposes.

Coatepec coffees are among the finest grown in Mexico, and take rank with the world's best grades. They are quite acidy, but have a desirable flavor; and when blended with coffees like Bourbon Santos, make a satisfactory cup.

The Orizaba, Huatusco, and Jalapa growths resemble Coatepecs, of which they are neighbors in the state of Vera Cruz. They are thin in body but are stylish roasters, and have a good cup qualities. As a class they do not possess the heavy body and acidity of genuine Coatepecs. Some Huatuscos are exceptions. Orizaba is superior to Jalapa. Chiapas and Tapachula coffees are generally more like Guatemalan growths than any others produced in Mexico, which is natural in view of the proximity of the districts to the northern boundary of Guatemala. The Sierra, Tampico, Tabasco, and Coatzacoalcos coffees are uncertain in quality; mostly they are low



Mild Coffee Map—No. 1

Showing the Mild Coffee-Producing Countries of the Western Hemisphere

Copyright 1922 by
The Tea and Coffee Trade Journal Co.

grade, some of them frequently possessing a groundy, flat, or Rio-y flavor.

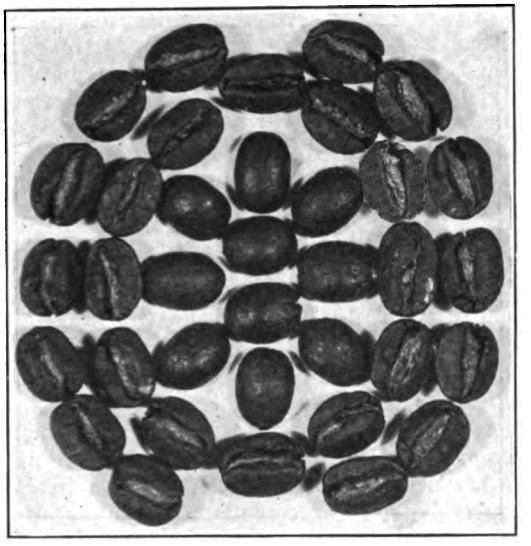
Cordoba coffees lack the acidity and tang of the Oaxacas, but make a handsome roast. They are considered too neutral to form the basis of a blend, but can be used to balance the tang of other grades.

CENTRAL AMERICANS. Central American coffee is the general trade name applied to the growths produced in Guatemala, Honduras, Salvador, Nicaragua, Costa Rica, and Panama, the countries comprising Central America.

GUATEMALA. This country sends the largest quantity to the United States, and also produces the best average grades of the Central American districts. Guatemalas are mostly washed and are very stylish. The bean has a waxy, bluish color. It splits open when roasting and shows a white center. Low-grown Guatemalas are thin in the cup, but the coffees grown in the mountainous districts of Coban and Antigua are quite acidy and heavy in body. Some Cobans border on bitterness because of the extreme acidity. The Antiguas are medium, flinty beans; while Cobans are larger. Both grades are spicy and aromatic in the cup, and are particularly good blenders. Properly roasted to a light cinnamon color, and blended with a high-grade combination, Cobans make one of the most serviceable coffees on the American market.

Guatemalas are generally classified as noted in the Complete Reference Table.

MEXICAN BEANS — ROASTED



GUATEMALA BEANS — ROASTED

HONDURAS. While the upland coffee of Honduras is of good quality, the general run of the country's production seldom brings as high a price as Santos of equal grade. Nearly all Honduras coffee consists of small, round berries, bluish green in color. Very little of this growth comes to the United States; the bulk of the exports going to Europe, where it commands a high price, especially in France.

SALVADOR. Salvador coffee is inferior to Guatemala's product, grade for grade. Only a small proportion is washed; and the bulk of the crops is "naturals"; that is, unwashed. The bean is large and of fair average roast. The washed grades are fancy roasters, with very thin cup. The largest part of the production goes to Europe; some twenty-five percent of the exports are brought into the United States through San Francisco.

NICARAGUA. The ordinary run of Nicaragua coffee (the naturals) is looked upon in the United States as being of low quality, though the washed coffees from the Matagalpa district have plenty of acid in the cup and usually are fine roasters. Matagalpa beans are large and blue-tinged. Germany, Great Britain, and France take about all the Honduras coffee exported, only about six percent of the total coming to the United States. These coffees are described more in detail in the Complete Reference Table.

COSTA RICA. Good grades of Costa Rican coffee, such as are grown in the Cartago, San José, Alajuela, and Grecia districts at high altitudes, are highly esteemed by blenders. They are characterized by their fine flavor, rich body, and sharp acidity. It is frequently declared that some of these coffees are often acidy enough to sour cream if used straight. Due to careless methods of handling, sour or "hidey" beans are sometimes found in chops of Costa Ricans from the lowlands.

PANAMA. Panama grows coffee only for domestic use, and consequently it is little known in foreign markets. The bean is of average size and tends toward green in color. In the cup it has a heavy body and a strong flavor. The coffee grown in Boquette Valley is considered to be of fine quality, due no doubt to the care given in cultivation by the American and English planters there.

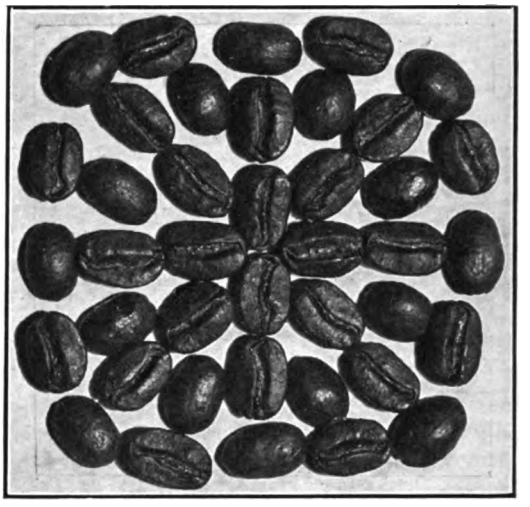
South America

COLOMBIANS. Colombia produces some of the world's finest coffees, of which the best known are Medellins, Manizales, Bogotas, Bucaramangas, Tolimas, and Cucutas. Old-crop Colombians of the higher grades, when mellowed with age, have many of the characteristics of the best East Indian coffees, and in style and cup are difficult to distinguish from the Mandhelings and the Ankolas of Sumatra. Such coffees are scarce on the American market, practically all the shipments coming to the United States being new crop and lacking some of the qualities of the mellowed beans. Compared with Santos coffee, good grade Colombians give one-fourth more liquor to a given strength with better flavor and aroma. They are classed and graded as noted in the Complete Reference Table.

Medellins are a fancy mountain-grown coffee, and are esteemed for their good qualities. The beans vary in size, and the color ranges from light to dark green, making a rather rough roast. In the cup they have a fine, rich, distinctive flavor, and in the American grading are regarded as the best of the Colombian commercial growths.

Manizales rank next to Medellins, and have nearly the same characteristics.

Bogotas of good grade are noted for their acidity, body, and flavor. When the acidity is tempered with age, the coffee can be drunk "straight" which can not be done



BOGOTA (COLOMBIA) BEANS — ROASTED

with many other growths. The Bogota green bean ranges from a blue-green bean to a fancy yellow. It is long, and generally has a sharp turn in one end of the center stripe. It is a smooth roaster, and has a rich mellow flavor.

Bucaramangas, grown in the district of that name, are regarded favorably in the American markets as good commercial coffees for blending purposes; the naturals have heavy body, but lack acidity and decided flavor, and are much used to give "back-bone" to blends. The fancies sometimes push the superior East Indian growths hard for first place.

Tolimas are considered a good grade average coffee, and are characterized by a fair-sized bean, attractive style, and good cup quality.

Cucuta coffees, though grown in Colombia, are generally classified among the Maracaibos of Venezuela, because they are mostly shipped from that port. They are described, accordingly, with the Venezuelan coffees.

VENEZUELA. The coffees of Venezuela are generally grouped under the heads of Caracas, Puerto Cabello, and Maracaibo, the names of the ports through which they are exported. Each group is further subdivided by the names of the districts in which the principal plantations lie. La Guaira coffee includes that produced in the vicinity of Caracas and Cumana.

Caracas coffee is one of the best known in the American market. The washed Caracas is in steady demand in France

and Spain. The bean is bluish in color, somewhat short, and of a uniform size. The liquor has a rather light body. Some light-blue washed Caracas coffees are very desirable, and have a peculiar flavor that is quite pleasant to the educated palate. Caracas chops rarely hold their style for any length of time, as the owners usually are not willing to dry properly and thoroughly before milling. When, however, the price is right, American buyers will use some Caracas chops instead of Bogotas. At equal prices the latter have the preference, as they have more body in the cup. Puerto Cabello and Cumana coffees are valued just below Caracas. They are grown at a lower altitude, and are somewhat inferior in flavor.

Not less than one-third of Puerto Cabello coffees come across the thirty-mile gulf to the westward from the port of Tucacas, in a little steamer called the Barquisimento, which is famous all along the coast as the "cocktail shaker." C. H. Stewart[1] solemnly asserts that "Barky" can do the "shimmy" when lying at anchor in quiet waters.

Merida and Tachira coffees are considered the best of the Maracaibo grades, Tovars and Trujillos being classed as lower in trade value. Though Cucuta coffee is grown in the Colombian district of that name, it is largely shipped through Maracaibo; and hence is classed among the Maracaibo types. It ranks with Meridas and fine grade Boconos, and somewhat resembles the Java bean in form and roast, but is decidedly different in the cup. Washed Cucutas are noted for their large size, roughness, and waxy color. They make a good-appearing roast, splitting open, and showing irregular white centers. New-crop beans are sometimes sharply acid, though they mellow with age and gain in body.

Until recent years, Tachira coffee was always sold as Cucuta; but now there is a tendency to ship it under the name Tachira-Venezuela, while true Cucuta is marked Cucuta-Colombia. Tachiras closely resemble the true Cucutas, grade for grade. Up to about 1905 the coffees grown near Salazar, in Colombia, came to market under the name of Salazar; but since then, they have been included among the Cucuta grades and are sold under that name.

The state of Tachira lies next to the Colombian boundary, and its mountains produce much fine washed coffee. This has size and fair style, as a rule, but does not possess cup qualities to make it much sought. It ages well and, being of good body, the old crops, other things being equal, frequently bring a tidy premium.

The Rubio section of Tachira produces the best of its washed coffees. Here are several of the largest and best-equipped estates in all Venezuela. Washed when fresh, the coffees from these estates are usually sold somewhat under the fancy Caracas; but the trillados of the Tachira rank with the best of the country, owing to their large bean, solid color, and good quality. They roast well, and cup with good body, though not much character. Good Tachira trillados are sold on the same basis as the Cucutas, which they resemble.

The Meridas are raised at higher altitudes than Cucutas, and good grades are sought for their peculiarly delicate flavor — which is neither acidy nor bitter — and heavy body. They rank as the best by far of the Maracaibo type. The bean is high-grown, of medium size, and roundish. It is well knit, and brings the highest price while it still holds its bluish style, as it then retains its delicate aroma and character. The trillados of Merida run unevenly.

Tovars rank between Trujillos and Tachiras. They are fair to good body without acidity; make a duller roast than Cucutas,

[1] Stewart, C. H. "The Coffee Status of Venezuela." *Tea and Coffee Trade Jour.* Jan. 1922 (vol. xlii : no. 1 : pp. 29 - 35.)

MARACAIBO BEANS — ROASTED

but contain fewer quakers. They are used for blending with Bourbon Santos. Boconos are light in color and body. They are of two classes; one a round, small to medium, bean; and the other larger and softer. Their flavor is rather neutral, and they are frequently used as fillers in blends. Trujillos lack acidity and make a dull, rough roast, unless aged. They are blended with Bourbon Santos to make a low-priced palatable coffee. Some coffees of merit are produced at Santa Ana, Monte Carmelo, and Bocono in Trujillo.

Other South American Countries

The coffees from other South American countries, even where there is an appreciable production, are not important factors in international trade. The coffee of Ecuador, shipped through the port of Guayaquil, goes mostly to Chile, a comparatively small quantity being exported to the United States. The bean is small to medium in size, pea-green in color, and not desirable in the cup. The coffee is about equal to low-grade Brazil, and is used principally as a filler. Peru produces an ever-lessening quantity of coffee, the bulk of the exports in pre-war years going to Germany, Chile, and the United Kingdom. It is a low-altitude growth, and is considered poor grade. The bean ranges from medium to bold in size, and from bluish to yellow in color. Bolivia is an unimportant factor in the international coffee trade, most of its exports going to Chile. The chief variety produced is called the Yunga, which is considered to be of superior quality; but only a small quantity is grown. Guiana's coffee trade is insignificant. The three best-known types are the Surinam, Demerara, and Cayenne, named after the ports through which they are shipped.

The West Indies

Coffee either is, or can be, grown practically everywhere in the West Indies; but the chief producing districts are found on the islands of Porto Rico, Haiti (and Santo Domingo), Jamaica, Guadeloupe, and Curaçao. Coffees coming from these islands are generally known by the name of the country of production, and may be further identified by the names of the districts in which they are grown.

PORTO RICO. Since the United States took possession of Porto Rico, soil experts have endeavored to raise the quality of the coffee grown there, especially the lower grades, which had peculiarly wild characteristics. Today, the superior grades of Porto Rican coffees rank among the best growths known to the trade. The bean is large, uniform, and stylish; ranging in color from a light gray-blue to a dark green-blue. Some of these are artificially colored for foreign markets. The coffee roasts well, and has a heavy body, similar to the fanciest Mexicans and Colombians. Its cup is not as rich, but it makes a good blend. Porto Rican coffees command a higher price in France than in the United States, which accounts for the larger proportion of exports to Europe, excepting when the French market was cut off during the World War.

JAMAICA. Jamaica produces two distinct types of coffee, the highland and the lowland growths. Among the first-named is the celebrated Blue Mountain coffee, which has a well developed pale blue-green bean that makes a good-appearing roast and a pleasantly aromatic cup. It is frequently compared with the fancy Cobans of Guatemala. The lowland coffee is a poorer grade, and consists largely of a mixture of different growths produced on the plains. It is a fair-sized bean, green to yellow in the "natural", and blue-green when washed. In the cup it has a grassy flavor, but is flat when drunk with cream. It is used chiefly as a filler in blends, and for French roasts.

HAITI AND SANTO DOMINGO. The coffees of these two republics have like characteristics, being grown on the same island and in about the same climatic and soil conditions. Careless cultivation and preparation methods are responsible for the generally poor quality of these coffees. When properly grown and cured, they rank well with high-grade washed varieties, and have a rich, fairly acid flavor in the cup. The bean is blue-green, and makes a handsome roast.

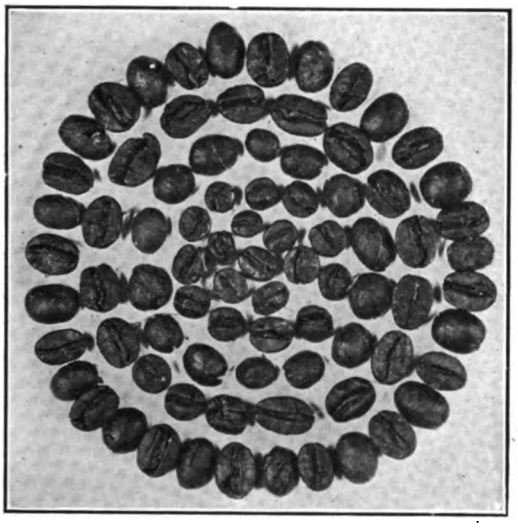
GUADELOUPE. Guadeloupe coffee is distinguishable by its green, long, and slightly thick bean, covered by a pellicle of whitish silvery color, which separates from the bean in the roast. It has excellent cup qualities.

MARTINIQUE. This island formerly produced a coffee closely resembling the Guadeloupe; but no coffee is now grown there, though some Guadeloupe growths are shipped from Martinique, and bear its name.

OTHER WEST INDIAN ISLANDS. Among the other West Indian islands producing small quantities of coffee are Cuba, Trinidad, Dominica, Barbados, and Curaçao. The growths are generally good quality, bearing a close resemblance to one another. In the past, Cuba produced a fine grade; but the industry is now practically extinct.

Asia

ARABIA. For many generations Mocha coffee has been recognized throughout the world as the best coffee obtainable; and until the pure food law went into effect in the United States, other high-grade coffees were frequently sold by American firms under the name of Mocha. Now, only coffees grown in Arabia are entitled to that



MOCHA BEANS — ROASTED

valuable trade name. They grow in a small area in the mountainous regions of the southwestern portion of the Arabian peninsula, in the province of Yemen, and are known locally by the names of the districts in which they are produced. Commercially they are graded as follows: Mocha Extra, for all extra qualities; Mocha No. 1, consisting of only perfect berries; No. 1-A, containing some dust, but otherwise free of imperfections; No. 2, showing a few broken beans and quakers; No. 3, having a heavier percentage of brokens and quakers and also some dust.

Mocha beans are very small, hard, roundish, and irregular in form and size. In color, they shade from olive green to pale yellow, the bulk being olive green. The roast is poor and uneven; but the coffee's virtues are shown in the cup. It has a distinctive winy flavor, and is heavy with acidity — two qualities which make a straight Mocha brew especially valuable as an after-dinner coffee, and also esteemed for blending with fancy, mild, washed types, particularly East Indian growths.

As in other countries, the coffees grown on the highlands in Yemen are better than the lowland growths. As a rule, the low altitude bean is larger and more oblong than that grown in the highlands, due to its quicker development in the regions where the rainfall, though not great, is more abundant.

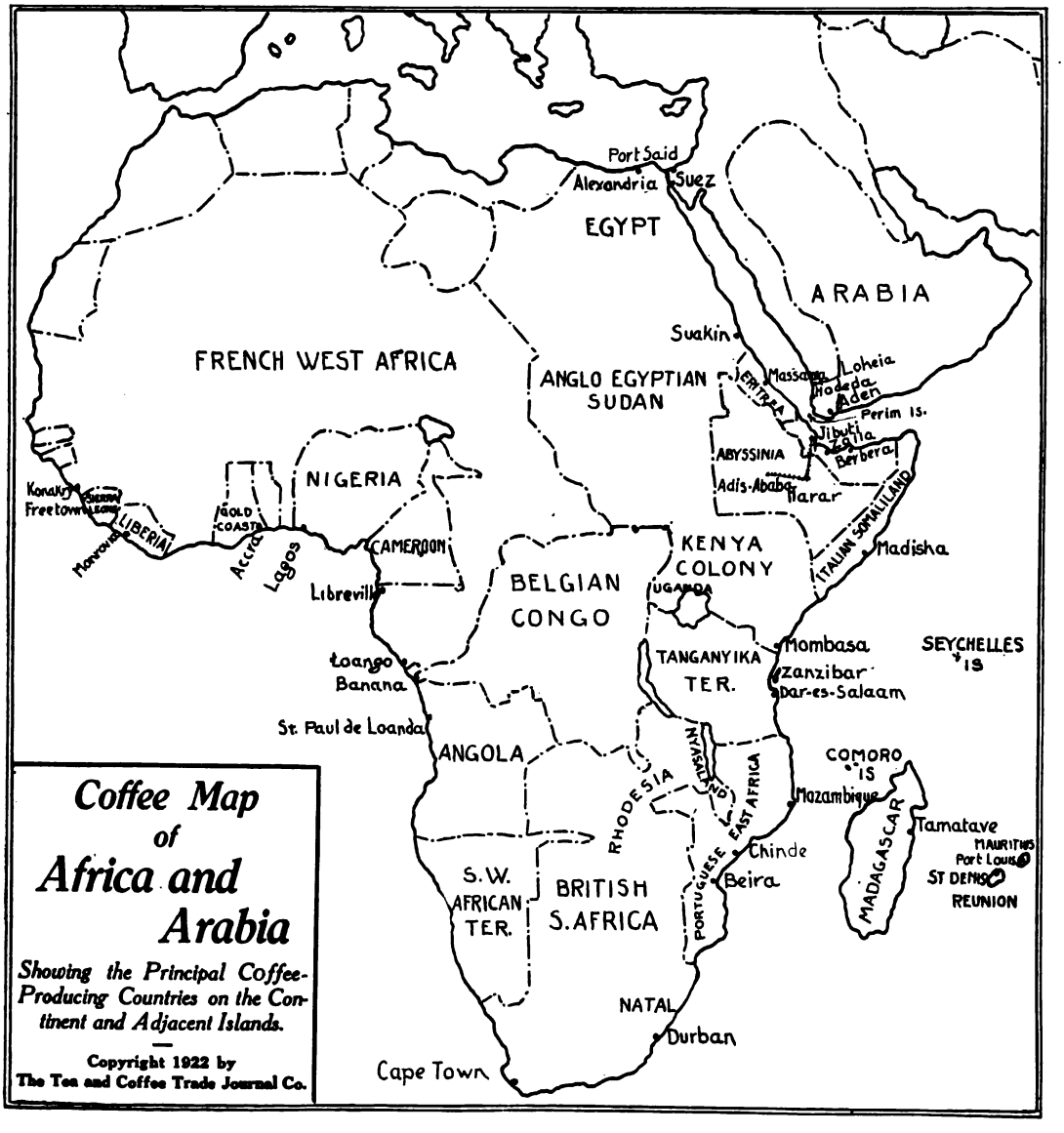
While Mocha coffees are known commercially by grade numbers, the planters and Arabian traders also designate them by the name of the district or province in which each is grown. Among the better grades thus labeled are, the Yaffey, the Anezi, the Mattari, the Sanani, the Sharki, and the Haimi-Harazi. For the poorer grades, these names are used: Remi, Bourai, Shami, Yemeni, and Maidi. Of these varieties, the Mattari, a hard and regular bean, pale yellow in color, commands the highest price, with the Yaffey a close second. Harazi coffee heads the market for quantity coupled with general average of quality.

INDIAN AND CEYLON. Coffees from India and Ceylon are marketed almost exclusively in London, little reaching the American trade. Of the Indian growths, Malabars, grown on the western slope of the Ghaut mountains, are classed commercially as the best. The bean is rather small and blue-green in color. In the cup it has a distinctive strong flavor and deep color. Mysore coffee ranks next in favor on the English market. It is mountain grown, and the bean is large and blue-green in color. Tellicherry is another good grade coffee, closely resembling Malabar. Coorg (Kurg) coffee is an inferior growth. It is lowland type, and in the cup is thin and flat. The bean is large and flat, and tends toward dark green in color. Travancore is another lowland growth, ranking about with Coorg, and has the same general characteristics. See the Complete Reference Table for details.

Ceylon, although it once was one of the world's most important producers, has been losing ground as a coffee-producing country

since 1890. Ceylon coffees are classified commercially as "native", "plantation", and "mountain". The native is a poor-grade, lowland growth, with large flat bean and low cup quality. The plantation, so named because more carefully cultivated on highland plantations, is a stylish roaster, and gives a rich flavor and strong fragrance in the cup. The mountain, grown at high altitudes, is a small, steel-blue bean, and is considered by British traders as equal to the best varieties grown anywhere. It was formerly shipped to Aden to be mixed with Mocha.

FRENCH INDO-CHINA. The coffee of French Indo-China is highly prized in France, where the bulk of the exports goes. The coffee tree grows well in the provinces of Tonkin, Annam, Cambodia, and Cochin-China. Tonkin is the largest producer, and grows the best varieties. In the cup, Tonkin coffee is thought by French traders to compare favorably with Mocha. Of the several varieties of *Coffea arabica* grown in Indo-China, the *Grand Bourbon, Bourbon rond,* and the *Bourbon Le Roy,* are the best known. The first-named is a large bean of good quality; the second is a small, round



PRINCIPAL VARIETIES OF GREEN COFFEE BEANS.
NATURAL SIZE AND COLOR

bean of superior grade; and the third is a still smaller bean of fair cup quality.

Africa

ABYSSINIA. The coffee grown in Abyssinia is classified commercially into two varieties: Harari, which is grown principally in the district around Harar; and Abyssinian, produced mainly in the provinces of Kaffa, Sidamo, and Guma. Harari coffee is the fruit of cultivated trees; while Abyssinian comes from wild trees. The first-named produces a long and well-shaped berry, and is often referred to as Longberry Harari. The bean is larger than the Mocha, but similar in general appearance. Its color shades from blue-green to yellow. Good grades of Harari have cup characteristics resembling Mocha, and by some are preferred to Mocha, because of their winier cup flavor. The Abyssinian coffee is considered much inferior to Harari; and chops generally contain many imperfections. The bean is dark gray in color. Little Abyssinian coffee comes to the United States.

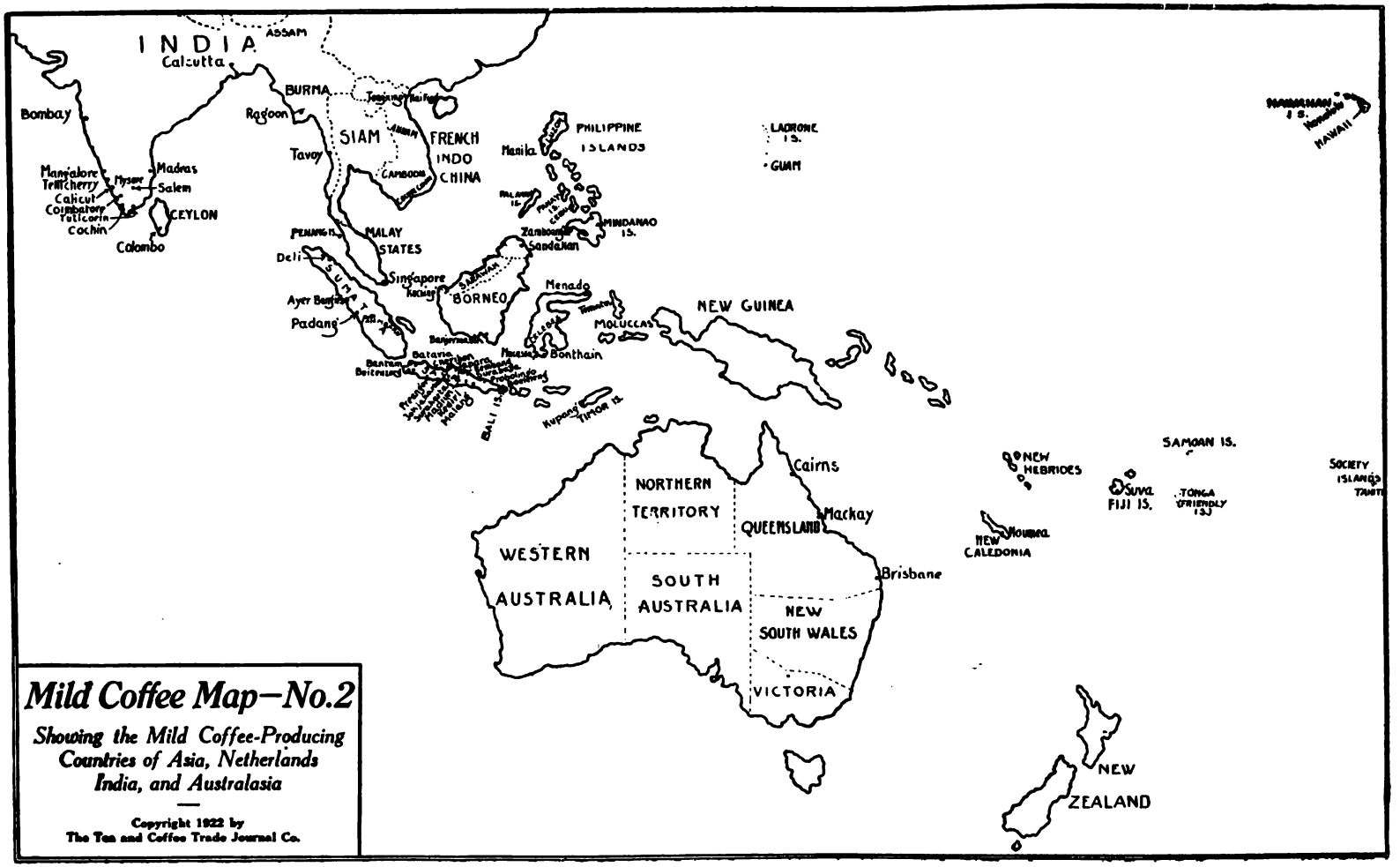
Many other African countries produce coffee; but little of it ever reaches the North American market. Uganda, in British East Africa, grows a good grade of *robusta* coffee which is valued on the London market. Liberian coffee, grown on the west coast, used to be mixed with Bourbon Santos to some extent; but it is generally considered low grade, although it makes a handsome, elephantine roast. The product of Guinea is a very small bean, half-way between a peaberry and a flat bean, and has a dingy brown color. It is considered worthless as a drink. A medium-sized, strong-flavored bean that is rich in the cup, is grown in the African Congo district. In Angola a fair quantity of coffee is produced. In the cup it has a strong and pungent flavor, but lacks smoothness and aroma. Zanzibar produces a pleasing coffee in very limited quantities. The bean is medium size, and regular in shape. Mozambique's coffee is greenish in color, of medium size, and mellow. The production is small. Madagascar produces an insignificant quantity for export, although the coffee is considered fair average, with rich flavor, and considerable fragrance. Bourbon coffee, grown on the island of Réunion, commands a high price in the French market, where practically all exports go. It is a small, flinty bean, and gives a rich cup and fragrance.

WASHED JAVA BEANS — ROASTED

East Indian Islands

Some of the coffees from the East Indian islands rank among the best in the world, particularly those from Sumatra. East India coffees are distinguished by their smooth, heavy body in the cup, the fancy grades giving an almost syrupy richness.

JAVA. Java coffees are generally of a smaller bean than those from Sumatra, and are not considered as high grade. The bulk of the new-crop growths have a grassy flavor which most people find unpleasant when drunk straight. Under the old culture system, coffee was bought by the government, and held in godowns from two to three years, until it had become mellow with age. In late years, this system has been abandoned; and the planters now sell their product as they please, and in most cases without mellowing, excepting as they age during the long sea voyage from Batavia to destination. Before the advent of large fleets of steamers in the East Indian trade, the coffee was brought to America in sailing vessels that required from three to four months for the trip. During the voyage, the coffee went through a sweating process which turned the beans from a light green to a dark brown, and considerably enhanced their cup values. The sweating was due to the coffee being loaded while moist, and then practically sealed in the vessel's hold during all its trip through the tropical seas. As a consequence, the cargo steamed and foamed; and as a rule, part of the coffee became moldy,



Mild Coffee Map—No.2

Showing the Mild Coffee-Producing Countries of Asia, Netherlands India, and Australasia

Copyright 1922 by
The Tea and Coffee Trade Journal Co.

the damage seldom extending more than an inch or two into the mats. Sweated coffees commanded from three to five cents more than those that came in "pale".

Before the Java coffee trade began to decline in the latter part of the nineteenth century, *Coffea arabica* was grown abundantly throughout the island. Each residency had numerous estates, and their names were given to the coffees produced. The best coffees came from Preanger, Cheribon, Buitenzorg, and Batavia, ranking in merit in the order named. All Java coffees are known commercially either as private growth, or as blue bean washed, the former being cured by either the washing or the dry hulling method, while the latter are washed. Private growths are usually a pale yellow, the bean being short and round and slightly convex. It makes a handsome even roast, showing a full white stripe. The washed variety is a pale blue-green, the bean closely resembling the private growth in form and roast. These coffees have a distinctive character in the cup that is much different from any other coffee grown. Their liquor is thin.

All the better known coffees of Java, which are designated by the districts in which they are grown, are listed in the Complete Reference Table. Coffee from few of the many districts comes to the North American market. Among those that are sold in the United States are the Kadoe and Semarang, both of which are small, yellowish green; and the Malang, a green, hard bean which makes a better roast than Kadoe and Semarang, but is inferior to them in the cup.

SUMATRA. Sumatra has the reputation of producing some of the finest and highest-priced coffees in the world, such as Mandheling, Ankola, Ayer Bangies, Padang Interior, and Palembang. Mandheling coffee is a large, brownish bean which roasts dull, but is generally free from quakers. It is very heavy in body, and has a unique flavor that easily distinguishes it from any other growth. The Ankola bean is shorter and better-appearing than Mandheling, but otherwise bears a close resemblance. Its flavor is only slightly under Mandheling; and, like that coffee, is recommended for blending with the best grades of Mocha. While the Ayer Bangies bean is somewhat larger than the other two just mentioned, it is not so dark brown in color, and is not quite so heavy in body; the flavor is very delicate. These three growths are known in the trade as the "Fancies" and are considered the best of Sumatra's production.

The Sumatra coffee best known to the American trade is the Padang Interior, which is shipped through the port of Padang on Sumatra's west coast. The bean is irregular in form and color, and makes a dull roast. However, the flavor is good, although it lacks the richness of the Fancies. Another celebrated coffee grown on the west coast is the Boekit Gompong, grown on the estate of that name near Padang. It is a high-grade coffee, making a handsome roast, and possessing a delicate flavor. The foregoing coffees are produced on what were formerly termed government estates, and during the heyday of government control were sold by auction and came mostly to the United States.

Among the private estate coffees, Corinchies take first rank for quality, some traders saying that they are the best in international commerce. They closely resemble Ankolas, but range a cent or two lower in price. Next in order of merit is Timor coffee, grown on the island of that name. It is not as attractive in appearance, roast, or cup quality as the Corinchie. A grade below Timors is Boengie coffee, which is seldom seen on the North American market. Kroe coffee is better known and more widely used in the United States. The bean is large, but has an attractive appearance. Kroes are of heavy body, of somewhat groundy flavor when new crop, and are good roasters and blenders. Other East Indian coffees are Teagals, Balis, and Macassars, all of which are second-rate growths as compared with the bulk of Sumatras, grade for grade. The Macassars are produced in the district of that name on island of Celebes. The best coffee grown in Celebes comes from the province of Menado, and is known by that name. It is thought to be of a superior quality, and commands a high price in Europe.

The Pacific Islands

The Philippine Islands have not figured in international coffee trade since 1892, although in preceding years the Philippines exported several million pounds of an average good grade of coffee. While coffee is one of the shade trees used by householders in Guam, none of the fruit is exported. Coffee production is an unimportant industry in Samoa, Australia, New Guinea,

New Caledonia, and other Pacific islands, and none is grown for export.

HAWAII. Since the beginning of the twentieth century the Hawaiian islands have taken a position of increasing importance, shipping some two million pounds of good quality coffee to the United States, their biggest customer. Coffee grows to some extent on all the islands of the group, but fully ninety-five percent is raised in the districts of Kona, Puna, and Hamakua on the main island of Hawaii. All Hawaiian coffee is high grade; and is generally large bean, blue-green in color when new crop, and yellow-brown when aged. It makes a handsome roast, and has a fine flavor that is smooth and not too acid. It blends well with any high-grade mild coffee. Kona coffee, grown in the district of that name, commands the highest price. Old-crop Kona coffee is said by some trade authorities to be equal to either Mocha or Old Government Java.

Appearance, Aroma, and Flavor in Cup-Testing

Before the beginning of the twentieth century, practically all the coffees bought and sold in the United States were judged for merit simply by the appearance of the green or of the roasted bean. Since that time, the importance of testing the drinking qualities has become generally recognized; and today every progressive coffee buyer has his sample-roasting and testing outfit with which to carry out painstaking cup tests. Both buyers and sellers use the cup test, the former to determine the merits of the coffee he is buying, and the latter to ascertain the proper value of the chop under consideration. Frequently a test is made to fix the relative desirability of various growths considered as a whole, using composite samples that are supposed to give representation to an entire crop.

The first step in testing coffee is to compare the appearance of the green bean of a chop with a sample of known standard value for that particular kind of coffee. The next step is to compare the appearance when roasted. Then comes the appearance and aroma test, when it is ground; and finally, the most difficult of all, the trial of the flavor and aroma of the liquid.

Naturally the tester gives much care to proper roasting of the samples to be examined. He recognizes several different kinds of roasts which he terms the light, the medium, the dark, the Italian, and the French roasts, all of which vary in the shadings of color, and each of which gives a different taste in the cup. The careful tester watches the roast closely to see whether the beans acquire a dull or bright finish, and to note also if there are many quakers, or off-color beans. When the proper roasting point is reached, he smells the beans while still hot to determine their aroma. In some growths and grades, he will frequently smell of them as they cool off, because the character changes as the heat leaves them, as in the case of many Maracaibo grades.

After roasting, the actual cup-testing begins. Two methods are employed, the blind cup test, in which there is no clue to the identity of the kind of coffee in the cup; and the open test, in which the tester knows beforehand the particular coffee he is to examine. The former is most generally employed by buyers and sellers; although a large number of experts who do not let their knowledge interfere with their judgment, use the open method.

In both systems the amount of ground coffee placed in the cup is carefully weighed so that the strength will be standard. Generally, the cups are marked on the bottom for identification after the examination. Before pouring on the hot water to make the brew, the aroma of the freshly ground coffee is carefully noted to see if it is up to standard. In pouring the water, care is exercised to keep the temperature constant in the cups, so that the strength in all will be equal. When the water is poured directly on the grounds, a crust or scum is formed. Before this crust breaks, the tester sniffs the aroma given off; this is called the wet-smell, or crust, test, and is considered of great importance.

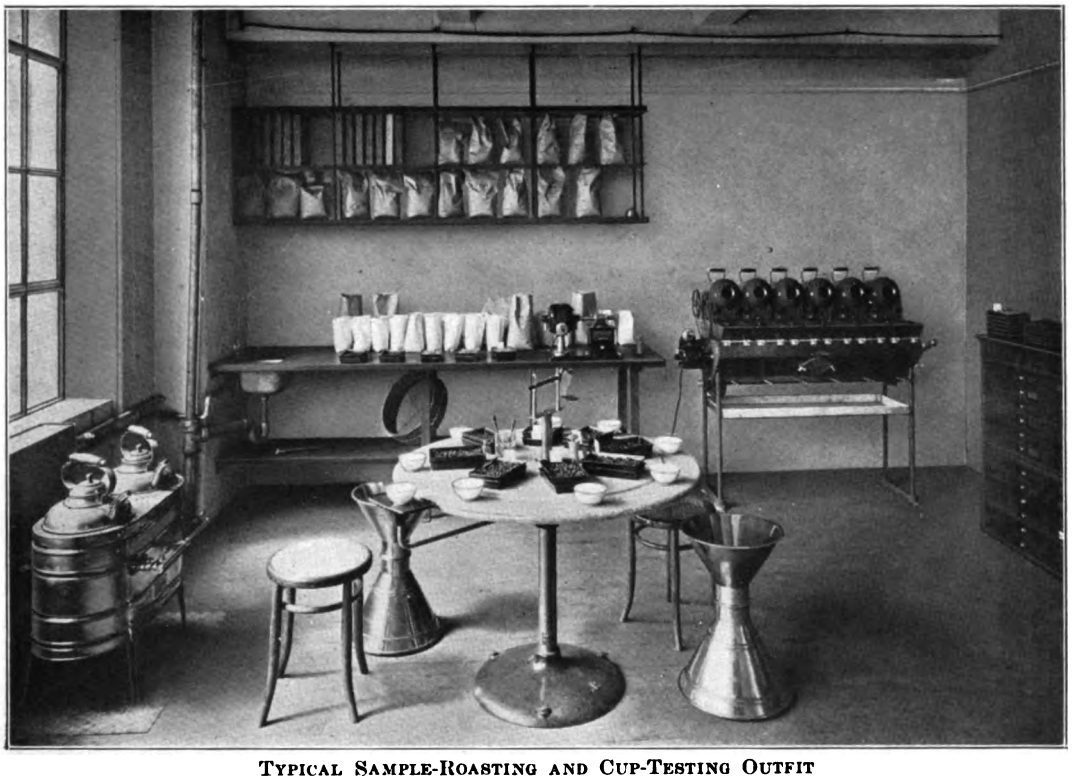
Of course, the taste of the brew is the most important test. Equal amounts of coffee are sipped from each cup, the tester holding each sip in his mouth only long enough to get the full strength of the flavor. He spits out the coffee into a large brass cuspidor which is designed for the purpose. The expert never swallows the liquor.

Cup-testing calls for keenly developed senses of sight, smell, and taste, and the faculty for remembering delicate shadings in each sense. By sight, the coffee man judges the size, shape, and color of the green and roasted bean, which are import-

ant factors in determining commercial values. He can tell also whether the coffee is of the washed or unwashed variety, and whether it contains many imperfections such as quakers, pods, stones, brokens, off-colored beans, and the like. By his sense of smell of the roast and of the brew, he gauges the strength of the aroma, which also enters into the valuation calculation. His palate tells him many things about a coffee brew — if the drink has body and is smooth, rich, acidy, or mellow; if it is winy, neutral, harsh, or Rioy; if it is musty, groundy, woody, or grassy; or if it is rank, hidey (sour), muddy, or bitter. These are trade designations of the different shades of flavor to be found in the various coffees coming to the North American market; and each has an influence on the price at which they will be sold.

The up-to-date cup-tester requires special equipment to get the best results. A typical installation consists of a gas sample-roasting outfit, employing at least a single cylinder holding about six ounces of coffee, and perhaps a battery of a dozen or more; an electric grinding mill; a testing table, with a top that can be revolved by hand; a pair of accurately adjusted balance scales; one or more brass kettles; a gas stove for heating water; sample pans; many china or glass cups; silver spoons; and a brass cuspidor that stands waist high and is shaped like an hour glass.

Since the World War, there have been some notable changes in the buying of coffees, particularly in European markets. For example, the old idea of buying fancy coffees at fancy prices is probably gone for good in Europe.



TYPICAL SAMPLE-ROASTING AND CUP-TESTING OUTFIT

In the middle of the picture is a standard revolving table (3½ feet in diameter), with scale mounted over the center, and with a "Mitchell Tray" for holding one cup independent of the table-top movement. There are two cuspidors, a double kettle outfit, a 6-cylinder sample roaster and a motor-driven sample grinder; also a set of sample separator sieves in the overhead rack, a bag sampler (lying on the lower shelf of the counter), and some coffee crushers (one on the end of the counter and one on the revolving table)

COMPLETE REFERENCE TABLE

OF

THE PRINCIPAL KINDS OF COFFEE GROWN IN THE WORLD

Together with Their Trade Values and Cup Characteristics

t, indicates town or trading center; *m n*, market name; *d*, district or state.

Grand Division	*Country*	*Shipping Ports*	*State, or District, Market Names and Gradings*	*Trade Values and Cup Characteristics*
North America	Mexico	Vera Cruz on Gulf of Mex.	Mexicans	*In general:* Mexicans are mild or mellow. The green beans are greenish to yellow (when aged) and of large size. The washed coffees make a handsome roast, showing pronounced white central stripe. In the cup they have a full rich body, fine acidity, and a wonderful *bouquet.*
			Vera Cruz, *d* Coatepec, *m n* (pro., co-at-e-pec)	Acid, of excellent heavy and rich flavor; fine for blending.
			Huatusco, *t* (pro., wha-toos-co)	Fine appearing washed coffee; next to Coatepec for acid and blending qualities.
			Orizaba, *t*	Regarded as next to Huatusco; good cup quality.
			Jalapa, *t* (pro., ha-lap-a)	Stylish roaster; frequently light body.
			Cordoba, *t*	Neutral, smooth in flavor, without acid tang; good body.
		Puerto Mexico on Gulf of Mex.	Tabasco, *d* & *m n* Coatzacoalcos, *t* & *m n*	Of uncertain character; many of them Rio-y, flat, and groundy. Unsatisfactory in the cup.
		Salina Cruz on Pacific Coatzacoalcos (Puerto Mexico) on Gulf of Mex.	Chiapas, *d* Soconusco, *t*, *m n* or Tapachula, *t*, *m n*	Resembles Guatemala coffees; smooth in character, and without decided tang.
			Oaxaca, *d*, *m n* & *t* (pr., wah-hock-ah) Sierra Oaxaca, (common - unwashed) Pluma Oaxaca (hidalgo-washed)	Small bean; excellent quality, sharply acid, fine flavor, but not stylish in appearance. The Pluma is a very fancy bean coffee, also acid and fine for blending.
		Acapulco on Pacific	Guerrero, *d* Sierra, *m n*	Inferior in quality; low growth and woody.
		Manzanillo on Pacific	Michoacan, *d* Uruapan, *t*	A superior coffee, but not produced in commercial quantity.
		Do.	Colima, *d*, *m n* & *t*	Very like Uruapan.

Grand Division	*Country*	*Shipping Ports*	*State, or District, Market Names and Gradings*	*Trade Values and Cup Characteristics*
North America (*Cont'd*)	Mexico (*Cont'd*)	Vera Cruz	Puebla, *d* Sierra, *m n*	Low-grade mountain coffee.
		Tampico	Tamaulipas, *d* Tampico, *m n & t*	An inferior grade.
			Tepic	So called "Mexican Mocha." Raised for local consumption. Not a commercial factor.
			Classes for all Mexicans 1. Commons (customary or natural). 2. Washed (W. I. P.) 3. Caracolillo (peaberry.)	
Central America	Guatemala	Puerto Barrios and Livingston on Caribbean	Guatemala	*In general:* Guatemalas are mild or mellow and mostly washed, The green beans are greenish to yellow (when aged), and of large size. The mountain-grown coffees make a handsome roast, are of full heavy body and excellent cup quality. The lower-altitude coffees are light in cup, but flavory.
		Ocos, Champerico, and San José on Pacific	Cobán, *t & m n*	Waxy, bluish bean; handsome uniform roast with white center. Heavy body, fine acidity.
		Belize (Br. Honduras)	Alta Verapaz, *d* Sehenaju, *t*	Gray-blue bean; fine mellow flavor. See Belize.
			Antigua, *d* Costa Cuca, *d* Costa Grande, *d* Barberena, *d* Tumbador, *d* Costa de Cucho, *d* Chicacao Xolhuitz, *d* Pochuta Malacatan, *d* San Marcos, *d* Chuva, *d* Escuintla, *d* San Vincente, *d* Pacaya, *d* Moran, *d* Amatitlan, *d* Palmar, *d* Motagua, *d*	Medium flinty bean; lighter in body; flavory, acid. *Classes for All Guatemalas* Most Guatemalas are washed and may be classified as follows: 1. Small flinty bean, extremely acid and flavory, produced in the highest altitudes of the Antigua, Moran, and Amatitlan districts. 2. Waxy, bluish bean, flinty, but large roast; heavy body with fine acidity. Produced in the mountainous regions of the Cobán, Costa Cuca, Tumbador, and Chuva districts.
				3. Waxy, bluish bean, handsome uniform roast, heavy-bodied but non-acid coffees produced in almost every district of the republic at an altiture of from 2,000 to 3,000 feet. 4. Stylish, green bean, handsome large uniform roast, very white center, mild cupping coffees produced practically everywhere in the republic at an altitude of from 1,500 to 2,500 feet.

Grand Division	*Country*	*Shipping Ports*	*State, or District, Market Names and Gradings*	*Trade Values and Cup Characteristics*
Central America (*Cont'd*)	Guatemala (*Cont'd*)		5. The lower altitudes of the various districts produce either medium bean, neutral cupping, colory coffees, or the Bourbon type of small bean, greenish coffee.	
	British Honduras	Belize	Belize, *m n*	A Cobán coffee from the Alta Verapaz district in Guatemala.
	Honduras	Trujillo and Puerto Cortés on Caribbean Amapala on Pacific	Honduras Santa Barbara, *d* Copan, *d* Cortez, *d* La Paz, *d* Choluteca, *d* El Paraiso, *d*	*In general:* Honduras coffees are small, rounded, and bluish-green. They are of a hard flinty character; make a fair roast and are neutral in flavor. While the upland grades are of good quality, the run of the country's production seldom brings as high a price as Santos of equal grade.
	Salvador	Acajutla La Union La Libertad	Salvador Usulutan, *d* La Libertad, *d* Santa Ana, *d* Santa Tecla, *d* La Paz, *d* Ahuachapan, *d* Juayua, *d* Santiago de Maria, *d* Sonsonate, *d* San Miguel, *d* San Salvador, *d* San Vincente, *d* Cuscatlan, *d* Morazan, *d* Cabanas, *d* Chalatenango, *d* La Union, *d*	*In general:* Salvador's coffees are mostly inferior in quality to those of Guatemala. The bulk of the crop is natural unwashed. Green beans are smooth and handsome and make a cinnamon roast. Flavor is neutral. Useful mainly as a filler. The washed coffee is a fancy roaster, with a very thin cup. *Classes and Gradings for All Salvadors: Washed* 1. Flinty, colory, greenish to bluish bean, fine white centered roasters, extremely stylish coffees with full-bodied cup merit.
			2. Grayish green to bluish green neutral-cupping coffees. *Unwashed* 1. Screened, large bean, fine roaster. 2. Average run, unscreened, so-called Current Unwashed. All unwashed coffees vary greatly in cup merit, much the same as with Santos coffees.	
	Nicaragua	Corinto on Pacific	Nicaragua	*In general:* The washed coffees of Nicaragua have merit, and are fine roasters; but the naturals, comprising the bulk of the crop, are of ordinary quality.
		San Juan del Norte (Greytown) on Caribbean	Matagalpa, *d*	Large, handsome, blue, washed bean, making fancy roast with plenty of acid in the cup.

Grand Division	*Country*	*Shipping Ports*	*State, or District, Market Names and Gradings*	*Trade Values and Cup Characteristics*
Central America (*Cont'd*)	Nicaragua (*Cont'd*)		Jinotega, *d* Los Pueblos, *d* Los Altos, *d*	
			Classes for All Nicaraguas: 1. Large, handsome, pale greenish to blue, washed coffee of the Matagalpa district, often showing fancy roast and acidly full-bodied cup. 2. Washed coffees of the lower regions; small in size, but greenish, colory, fine roasters and neutral cupping. 3. Unwashed coffee (bulk of the output) the merit of which depends entirely on the respective crop. Often a large proportion of the crop is mild cupping and as desirable as any other unwashed coffee; while another crop may produce a large quantity of Rio-flavored coffees.	
	Costa Rica	Puerto Limon on Caribbean Punta Arenas on Pacific	Costa Rica Cartago, *d* San José, *d* Alajuela, *d* Grecia, *d* Tres Rios, *d* Heredia, *d*	*In general:* The high-altitude coffees of Costa Rica are blue-greenish, large, rich in body, of fine, mild flavor, sharply acid, and superior for blending purposes. These coffees are famous for their fine preparation and careful screening. The lower regions produce coffees of more neutral-cupping qualities.
	Panama	Panama City	Panama Chiriqui, *d* Boquete, *m n*	*In general:* The green bean is of average size, greenish in color. In the cup it has a heavy body and a strong flavor. Grown chiefly for domestic consumption. Not a commercial factor.
West Indies (Greater Antilles)	Cuba	Havana Santiago	Cuba Oriente, *d* Guatanamo, *t* Santa Clara, *d* Pinar del Rio, *d* Vuelta Abaja, *m n*	*In general:* Cuban coffee is of good quality. The bean is of medium size, light green, and makes a uniform roast. The flavor resembles the fine washed coffees of Santo Domingo. Not commercially important.
	Haiti	Port au Prince Cap Haitien	Haiti St. Marc, *d* Gonaive, *d* Cap Haitien, *d* Jacmel, *d* Les Cayes, *d* Jeremie, *d*	*In general:* The Haitian washed coffee is a blue bean and makes an attractive roast. It has a rich, fairly acid, mildly-sweet flavor; of average quality. The naturals are used extensively for French roasts.

Grand Division	*Country*	*Shipping Ports*	*State, or District, Market Names and Gradings*	*Trade Values and Cup Characteristics*
West Indies (Greater Antilles) (*Cont'd*)	Santo Domingo	Santo Domingo Porto Plata	Santo Domingo Cape, *m n* Mocha, *d* Santiago, *d* Porto Plata, *d* Bani, *d* Barahona, *d*	*In general:* Santo Domingo coffee is a large, flat, pointed, greenish-yellow bean. The high-grown washed is of good body and fair flavor. The low grade is strong, approaching Rio in flavor. The natural coffees are used extensively for French roasts.
	Jamaica (British)	Kingston	Jamaica Classes: Blue Mountain (high-grown) Settlers' (ordinary, or plain-grown)	*In general:* Jamaica coffee is bluish-green when washed, and green to yellow when patio-dried. The washed high-grown makes a fancy roast, and is rich, full and mellow in the cup. The ordinary plain-grown makes a bright roast, and has a fairly good cup quality. The naturals are used extensively for French roasts.
	Porto Rico (U. S.)	San Juan Ponce Mayaguez Arecibo Aguadilla	Porto Rico Sierra Luquillo, *m n* Yauco, *d, t & m n* Ciales, *d & t* Cayey, *d & t* Utuado, *d & t* Lares, *d & t* Moca, *d & t* Adjuntas, *d & t* Las Larias, *d & t* Maricao, *d & t* San Sebastian, *d & t* Mayaguez, *d & t* Ponce, *d & t*	*In general:* Porto Rico coffee is a large, handsome, washed bean, light gray-blue to dark greenish blue in color, and makes a fancy roast without quakers. Strong or heavy body; peculiar flavor similar to a washed Caracas, but smoother. *Classes for All Porto Ricos* Caracolillo, a round bean peaberry; Primero, a superior grade of good size and color, usually hand-picked; Segundo, second grade, inferior to Primero in size and color; Trillo, lowest grade, sold locally.
(Lesser Antilles)	British West Indies Antigua Dominica Barbados Trinidad Tobago	Saint John Portsmouth Bridgetown Port of Spain Scarborough	Antigua Dominica (Soufrière) Barbados Trinidad Tobago	*In general:* While the quantity grown is small, the coffee is of good quality, and includes ten different varieties. That grown in Barbados is similar to that of Martinique, but a larger bean. This group is not an important commercial factor.

Grand Division	*Country*	*Shipping Ports*	*State, or District, Market Names and Gradings*	*Trade Values and Cup Characteristics*
West Indies (Lesser Antilles) (*Cont'd*)	Guadeloupe (French)	Pointe-à-Pitre	Guadeloupe Classes: 1.—Bonifieur, or Café Lustre (glossy) 2.—Habitant, or Café plus Pellicule (with pellicles)	*In general:* The Guadeloupe coffee bean is glossy, hard, long, and has an even green color, somewhat grayish. It is of excellent quality. The Saints bean is superior. The Ordinary is a smaller, rounder, curved bean. Guadeloupe coffees are mostly sold as Martinique.
	Martinique (French)	Fort-de-France	Martinique Grades: Fine Green Common Green Good Commercial Common " Picked " Common	*In general:* The Martinique bean is green, long, somewhat thick, and is usually shipped in the silver skin. It is of fine quality, but commercially unimportant. Guadeloupe coffees are not infrequently sold as Martinique.
	Curaçao (Dutch)	Willemstad	Curaçao	*In general:* The Curaçao coffee bean is small, of light color and flavor. It makes a bright cinnamon roast; useful as a filler.
South America	Colombia	Puerto Colombia (Savanilla) Barranquilla Cartagena Santa Marta on Atlantic Buenaventura Tumaco on the Pacific	Colombians, *m n*	*In general:* The Colombian coffee bean is greenish, yellow, and brown, depending on age, and is rich and mild in the cup. The fancy grades compare favorably with the world's best growths. They produce one-quarter more liquor of given strength than Santos coffees, and possess much finer flavor and aroma.
			Antioquia, *d* Medellin, *t & m n*	Light to dark green; handsome roasters; not as smooth as some Central American types, but best of Colombians; fine flavor and body.
			Caldas, *d* Manizales, *t & m n*	Similar to Medellins in cup quality, but not as heavy-bodied or as acid.
			Jerico	A favorably regarded Colombian.
			Magdalena, *d* Santa Marta, *t & m n*	Full, solid, blue, washed bean, making a fancy roast, but too acid to be used straight.
			Cundinamarca, *d* Bogotá, *t & m n*	The green bean is blue-green to fancy yellow and Java brown, depending on age; long, with a sharp turn in one end of the center stripe. It makes

Grand Division	*Country*	*Shipping Ports*	*State, or District, Market Names and Gradings*	*Trade Values and Cup Characteristics*
South America (*Cont'd*)	Colombia (*Cont'd*)			a smooth roast. The fancy has a rich, mellow flavor.
			Cauca, *t* & *m n*	Sometimes sold as imitation Bogota or Bucaramanga; but inferior in appearance, roast, and drink.
			Santander, *d* Bucaramanga, *t* & *m n*	Large bean, spongy and open, making a dull Java-style roast. The naturals lack acidity and flavor; but have a heavy body. The fancies are almost the equals of fine Javas and Sumatras.
			Cucuta, *t* & *m n*	Attractive in style and cup. (See Venezuela.)
			Ocana, *t* Savanilla, *m n*	Sometimes sold as an imitation Bogota or Bucaramanga; but inferior in appearance and cup.
			Tolima, *d* Ibague, *t* Honda, *t*	Fair size bean, attractive in style and cup.
			Classes for All Colombians: Café Trillado (natural or sun dried), Café Lavado (washed).	
			Gradings for All Colombians: Excelso (excellent), fantasia (excelso and extra), extra (extra), primera (first), segunda (second), caracol (peaberry), monstruo (large and deformed), consumo (defective), pasilla (siftings).	
	Venezuela	La Guaira Puerto Cabello Maracaibo	Venezuela	*In general:* The coffee of Venezuela is greenish-yellow to yellow; large bean, ranging next to Santos in quality and price. It is mild or mellow in the cup. The unwashed, or *trillado*, comprises the bulk of the crop.
			Caracas, *d*	Short, bluish bean, uniform in color, and making a light cinnamon roast, but containing quakers. The natural has a fair cup quality. The washed gives the best results in roast and cup.
			Puerto Cabello, *d*	The washed is a handsome bean, but inferior in flavor to Caracas. The unwashed is flinty; fair roast, no special merit in cup.

Grand Division	*Country*	*Shipping Ports*	*State, or District, Market Names and Gradings*	*Trade Values and Cup Characteristics*
South America (*Cont'd*)	Venezuela (*Cont'd*)		Cumana, *d*	Valued just below Caracas.
			Coro, *d*	Valued a trifle below Rio of the same grade.
			Trujillo, *d & m n*	A low grade, making a dull rough roast.
			Santa Ana	Light in color and body.
			Monte Carmelo	Light in color and body.
			Bocono	Light in color and body; neutral flavor. Two classes.
			Merida, *d & m n*	The best of the Maracaibos. The washed makes a good roast, and has a peculiar delicate flavor much prized by experts. It ranks among the world's best.
			Tovar, *m n*	Ranks between Trujillos and Tachiras. Fair to good body; without acidity. Used as filler in blends.
			Tachira, *m n* (San Cristobal)	Formerly sold as Cucuta, to which it is nearest in quality, appearance, and flavor.
			Cucuta, *t & m n* Salazar, *m n*	Grown in Colombia. Resembles Java bean in form and roast. The natural makes a full roast. The washed is a stylish, large bean, a beautiful roaster, splitting open with irregular white center; sharply acid in the cup.
			Angostura	A small bean, light in color and body, without much weight or character.
			Carupano	A low grade valued at about the same as a Brazil coffee of similar grade.
	British Guiana	Georgetown	Demerara, *m n*	*In general:* Not a commercial factor.
	Dutch Guiana (Surinam)	Paramaribo	Surinam, *m n*	*In general:* The production is limited and commercially unimportant.
	French Guiana (Cayenne)	Cayenne	Cayenne, *m n*	*In general:* Similar to Martinique. The production is limited and commercially unimportant.

Grand Division	*Country*	*Shipping Ports*	*State, or District, Market Names and Gradings*	*Trade Values and Cup Characteristics*
South America (*Cont'd*)	Brazil		Brazils, *m n*	*In general:* The coffees of Brazil, which are generally known in the trade as "Brazils" (to distinguish them from "Milds," the higher grades), are the "price" coffees of the world. Brazil produces about 70% of the world's supply.
		Santos	Sao Paulo, *d*	The largest coffee district, producing between 50% and 60% of the world's supply.
			Classes:	
			Bourbon Santos, *m n*	Small bean, resembling Mocha, but making a handsomer roast with fewer quakers. In color it varies from dark to light green, and from yellow to a pale straw, often with a red center. True Bourbons are first crop beans. In the cup they are smooth and palatable without tang.
			Flat Bean Santos, *m n*	Smooth surface, small to large, pale green and greenish-yellow to pale yellow. It is a sixth year crop of Bourbon Santos. Good full smooth body. Used straight and in combination with all milds.
			Mocha-Seed Santos, *m n*	A grade of Bourbon designed as a substitute for true Mocha on the European markets.
			Campinas, *d & t*	The oldest coffee district in Sao Paulo. There are 136 others.
			Gradings for All Sao Paulo:	
			1—Fine 2—Superior 3—Good	4—Regular 5—Ordinary 6—Escolha
		Rio de Janeiro	Minas Geraes Rio, *m n*	Various shades of green, medium to large. Peculiar pungent flavor and aroma.
			Gradings for All Rios:	
			(N. Y. Coffee Exchange)	
			1—No imperfections 2—6 imperfections 3—13 imperfections 4—29 imperfections 5—60 imperfections	6—110 imperfections 7—About 200 imperfections 8—About 400 imperfections
			(On Havre Exchange)	
			Washed—Inferior and ordinary Unwashed—Superior, 1st good, 1st regular, 1st ordinary, 2nd good, 2nd ordinary.	

Grand Division	*Country*	*Shipping Ports*	*State, or District, Market Names and Gradings*	*Trade Values and Cup Characteristics*
South America (*Cont'd*)	Brazil (*Cont'd*)	Victoria	Espirito Santo, *d* Victoria, *t* Capitania, *m n*	Large, dingy-green or brown bean making a roast free from quakers but muddy in the cup.
		Bahia	Bahia, *d, t,* & *m n*	Low grade, having a peculiar smoky flavor.
			Chapada, *t* & *m n*	Light-colored, fair-sized bean; attractive roast, but no cup character.
			Caravellas, *t* & *m n*	Similar to Chapada.
			Nazareth, *t* & *m n*	Small bean, fair roast, undesirable cup.
			Maragogipe, *t* & *m n*	A variety of *Coffea arabica;* large bean, elephantine roast, woody in the cup.
		Ceara	Ceara, *t* Cuaruaru, *m n*	Small, flinty, green bean; value like Santos of the same grade.
	Ecuador	Guayaquil	Ecuador	*In general:* The Ecuador coffee bean is small, pea-green in color, and not high grade. It resembles Ceara, and when old makes a bright roast. It is poor in cup quality and useful only as a filler. Not an important commercial factor.
	Peru	Callao Mollendo	Peru Choquisongo, *d* Cajamarca, *d* Perene, *d* Paucartambo, *d* Chauchamayo, *d* Huanuaco, *d* Pacasmayo, *d*	*In general:* The green coffee bean of Peru ranges from medium to bold in size, and from bluish to yellow in color. The highland variety has been compared with the high-grade Mexicans, but the lowland growths are not favorably regarded. Unimportant commercially.
	Bolivia		Bolivia La Paz, *d* Apolobamba, *t* Yungas, *m n* Cochabamba, *d* Santa Cruz, *d* Sara Velasco Chiquitos Cordillera El Beni, *d* Chuquisca, *d*	*In general:* Bolivia's coffee, though of superior quality and sometimes compared favorably with Arabian growths, is an unimportant factor in international coffee trading.
	Argentina		Argentina Salta, *d* Jujuy, *d*	*In general:* Argentina's coffee is grown chiefly for home consumption. Unimportant commercially.

Grand Division	*Country*	*Shipping Ports*	*State, or District, Market Names and Gradings*	*Trade Values and Cup Characteristics*
South America (*Cont'd*)	Paraguay		Paraguay Altos, *d* Asuncion, *d*	*In general:* Paraguay's coffee is all marketed in Asuncion, where it is sold as Brazilian coffee. It is not commercially important.
Asia	Arabia	Aden Hodeida Maidi Leheya	Mocha	*In general:* Arabian, or Mocha, beans are very small, hard, round, irregular in form and size; in color, olive green shading off to pale yellow. The roast is poor and irregular. In the cup they have a unique acid character, heavy body; in flavor, smooth and delicious.
			Yemen Mattari, *d* (Mohtari)	From the Beni-Mattar country; the best; a yellow-green translucent bean.
			Yaffey, *d*	From the Yaffey country near Taiz; second best.
			Sharki, *d* (Shergi)	A long light yellow bean, from the east, "Esh Shark" a superior Mocha with a rich full body.
			Sanani, *d*	From the Sanaa region; a green bean. A grade lower than Sharki.
			Haimi-Harazi, *d* (Hemi or Heimah)	A quality green bean from a mountain near Mattari.
			Anezi, *d* (Anisi)	From the El Anz country. Pale yellow and very hard.
			Sharsh, *d* Menakha, *d* Hifash, *d*	Superior qualities of the above due to different methods of curing.
			Remi, *d* (Reimah)	A poorer grade, reddish bean, from Djebel Remi.
			Bourai, *d* (Bura)	A poorer grade from Djebel Boura.
			Shami, *d*	A poorer grade from the north; Esh Sham.
			Yemeni, *d* (Taizi)	A poorer grade from the south; El Yemen.
			Maidi, *d*	A poorer grade from the port of Maidi.
			Abyssinia (Africa) Harar, *d*	Formerly known as Longberry Mocha, but still shipped through Aden *via* Jibuti. See Africa—Abyssinia.

Grand Division	*Country*	*Shipping Ports*	*State, or District, Market Names and Gradings*	*Trade Values and Cup Characteristics*
Asia (*Cont'd*)	Arabia (*Cont'd*)		*Gradings for All Mochas:* Mocha Extra—For all extra qualities as Yaffey, Anezi, Matari, Sharki. Mocha No. 1—For Anezi, Matari, Sharki; only perfect berries. No. 1A, same as No. 1, but with some dust. Mocha No. 2—Some broken and quakers. Mocha No. 3—Broken, quakers and dust. Magrache—Triage or screenings.	
	India	Madras Calicut Mangalore Tellicherry Tuticorin Bombay	Indias, *m n*	*In general:* The Indian coffee bean is small to large and blue-green in color. In the cup it has a distinctive strong flavor and deep color.
			Mysore, *d* Mysore, *t*	Mountain-grown, large, blue-green bean, heavy body.
			Madras, *d* Malabar, *m n* (Wynaad)	Small bean, solid and meaty; handsome roast, peculiar rich flavor.
			Nilgiri, *d* Nilgiris, *m n*	Small to large bean with slight acidity in the cup; plantation Ceylon character.
			Madura, *d* (Palni Hills)	No marked characteristics.
			Salem, *d* (Shevaroys)	Same as Nilgiris
			Coimbatore, *d*	Same as Nilgiris
			Tellicherry, *d*	A good grade resembling Malabar; somewhat similar to Nilgiris.
			Coorg (or Kurg), *d*	A large, flat, dark green bean, thin in the cup; a lowland variety.
			Travancore, *d*	Similar to Nilgiris.
			Cochin, *d* Cochin, *m n*	A native cherry.
			Bombay, *d* Kanara	Commercially unimportant.
			Bengal, *d* Chittagong	Commercially unimportant.
			Assam	Commercially unimportant.
			South Sylhet	Commercially unimportant.
	Burma	Rangoon	Burma Tavoy, *d*	Large spongy bean; grassy cup. Not a commercial factor.
			Classes for All Indias: 1—Native cherry (sun dried and then hulled) 2—Plantation (washed) Sizes: Nos. 1, 2 and 3; Peaberry and Triage	

Grand Division	*Country*	*Shipping Ports*	*State, or District, Market Names and Gradings*	*Trade Values and Cup Characteristics*
Asia (*Cont'd*)	Ceylon	Colombo	Ceylon Gampola, *d* Dumbara, *d* Kotmale, *d* Pussellawa, *d*	*In general:* Ceylon's coffees are no longer the commercial factor they were before the coffee blight practically destroyed the industry. Those left, however, still retain much of their original character, the hill-grown washed being unique in appearance and flavor. In the old days they were classed as native, or plain-grown, plantation, mountain, and Liberian.
	Malay States (British)	Penang (Georgetown) Singapore	Straits Liberian, *m n* Straits Robusta, *m n*	*In general:* The coffee from the Malay States is mostly Liberian and Robusta and is not important commercially, although the Robusta variety promises to become an important factor.
			Perak, *d*	Most important of the Federated States coffees.
			Selangor, *d*	Native state coffee.
			Negri-Sembilan, *d*	Nine states Federation district coffees.
			Bali, *d* & *m n*	From the island in Netherlands East Indies. (See p. 374.)
			Timor, *d* & *m n*	From the island in Netherlands East Indies. (See p. 374.)
	French Indo-China	Haiphong	Indo-China, *m n* Tonkin Annam Cambodia Cochin-China	*In general:* The coffees of French Indo-China, while comparatively new, give promise; but as yet are not commercially important. The original *arabica* plantings have been succeeded by *liberica* and *robusta* growths.
Malay Archipelago	Sunda Islands		East Indies, *m n*	*In general:* Included in this group are the best-known coffees from Sumatra, Java, Timor, Celebes, etc.
	Netherlands East Indies Sumatra	Padang Kroe (West Coast) Batavia (Java)	Sumatra	*In general:* Included among the coffees of Sumatra are several that are conceded to be the finest the world produces. The green beans are large, uniform, and vary in color from pale straw to deep mahogany. They have a smooth, heavy body, the

Grand Division	*Country*	*Shipping Ports*	*State, or District, Market Names and Gradings*	*Trade Values and Cup Characteristics*
Malay Archipelago (*Cont'd*)	Netherlands East Indies Sumatra (*Cont'd*)	Padang Kroe (West Coast) Batavia (Java)		fancies possessing an almost syrupy richness. They are graded as Private Estate (washed or dry hulled) and Blue Bean (washed).
			Padang, *d & t* Mandheling, *m n*	"The best coffee in the world"; also the highest-priced. Formerly a Government coffee. Yellow to brown, large-sized bean; dull roast, but free from quakers. It is of heavy body, exquisite flavor and aroma.
			Ankola, *m n*	Formerly a Government coffee. Large fat bean, making a dull roast. Second only to Mandhelings; it has a heavy body and rich, musty flavor.
			Siboga, *m n*	A harder bean Ankola; sometimes called Private Estate Ankola.
			Ayer Bangies, *m n*	Formerly a Government coffee. Large even bean, light brown color. Ranking with Mandheling and Ankola; of a delicate flavor but not much body.
			Corinchie, *m n*	Formerly a native cultivation. The bean is large, handsome, brown in color. It makes an attractive roast. Good body, plenty of bitter acid, delicious flavor.
			Interior, *m n*	Formerly all Government coffee. The true type of Old Government Java. Poor roast, good cup.
			Painan	Formerly a Government coffee. Mixed green and brown beans; poor roast. Heavy body, pungent flavor. Grades next to Interior.
			Liberian, *m n*	Formerly all Government coffee. *Coffea liberica.*
			Kroe, *t & m n*	Formerly a native cultivated coffee. Large even bean, fine roast, heavy body, somewhat groundy flavor.
			Lahat, *t & m n*	Former native cultivation. Smaller than Kroe; good roaster, flat cup.

Grand Division	*Country*	*Shipping Ports*	*State, or District, Market Names and Gradings*	*Trade Values and Cup Characteristics*
Malay Archipelago (*Cont'd*)	Netherlands East Indies Sumatra (*Cont'd*)	Padang Kroe (West Coast) Batavia (Java)	Palembang, *t* & *m n*	Former Private Estates. Smaller than the Padang bean; light color, strong cup.
			Indrapoera, *t* & *m n*	Former Private Estates. An inferior grade of Sumatra.
			Benkoelen, *t* & *m n*	Formerly a native cultivation. Good roast and cup.
			Libaya, *m n*	Formerly a native cultivation.
			Boekit Gompong. *m n*	Formerly a Private Estate. A perfect coffee, of heavier body than Mandheling, good roast; very delicate flavor.
			Kagoe Kaleh, *m n*	Formerly a Private Estate.
			Batang Baros, *m n*	Formerly a Private Estate.
			Telok Goenoeng, *m n*	Formerly a Private Estate.
			Aker Gedang, *m n*	Formerly a Private Estate. Small bean, good roast, fine flavor.
			Soerian, *m n*	Formerly a Private Estate. Large bean, fine roast, good cup. Ranks next to Boekit Gompong.
			Liki, *m n*	Formerly a Private Estate. Fine roast, light cup. It ranks next to Soerian.
			Loebor Sampir, *m n*	Formerly a Private Estate.
			Soengei, *m n*	Former Private Estate.
			Landei, *m n*	Former Private Estate.
			Ramboetan, *m n*	Former Private Estate.
			Gadoeng Batoe, *m n*	Former Private Estate.
			Merapi, *m n*	Formerly a Private Estate. Large bean, good roast, good cup.
			Si Barasap, *m n*	Formerly a Private Estate.
			Laboe Raya, *m n*	Formerly a Private Estate. Large bean, good roast, good cup.
		Balawan-Deli Panai	East Coast Deli, *d* Bintangmariah, *d* Oelakmedan, *d* Panai, *d*	These coffees are comparatively new. They partake of the qualities common to the general run of Sumatras without distinguishing characteristics.

Grand Division	*Country*	*Shipping Ports*	*State, or District, Market Names and Gradings*	*Trade Values and Cup Characteristics*
Malay Archipelago (*Cont'd*)	Netherlands East Indies (*Cont'd*) Java	Batavia	Java. *m n*	*In general:* Java coffees do not compare with Sumatras in quality. They are smaller in the bean, with a grassy flavor in the cup. Blue to pale yellow, short round bean. The washed makes a good smooth roast, light in the cup.
			Preanger, *d*	Best of the Java growths.
			Cheribon, *d*	Ranks next to Preanger.
			Kadoe, *d*	Small yellowish-green shelly bean; light in cup.
			Semarang, *d*	Ranks next to Kadoe in roast and cup quality.
			Malang, *d*	Hard green bean; better roaster than the above, but inferior in cup quality.
			Bantam, *t* & *m n*	Medium-sized yellowish bean.
			Buitenzorg, *t* & *m n*	One of the best of the Javas.
			Krawang, *t* & *m n*	Irregular bean; fair roaster; fair cup.
			Tegal, *t* & *m n*	One of the best of the Java growths.
			Banjoemas, *t* & *m n*	Medium-sized bean; creamy and fragrant in the cup.
			Pekalongan, *t* & *m n*	With characteristics like Pasuruan.
			Baquilan, *t* & *m n*	No marked characteristics.
			Japara, *t* & *m n*	Bean light in weight and color; cup neutral.
			Surakarta, *t* & *m n*	Large bean, handsome roast, creamy body, aromatic flavor in the cup.
			Jokjakarta, *t* & *m n*	Similar to Surakarta.
			Madiun, *t* & *m n*	Yellow bean, light in weight and body, but good cup.
			Rembang. *t* & *m n*	Similar to Kadoe.
			Surabaya, *t* & *m n*	Similar to Kadoe.
			Kediri, *t* & *m n*	Small hard bean; good drinker.
			Pasuruan, *t* & *m n*	Brown, uniform bean; fragrant in cup.

Grand Division	*Country*	*Shipping Ports*	*State, or District, Market Names and Gradings*	*Trade Values and Cup Characteristics*
Malay Archipelago (*Cont'd*)	Netherlands East Indies Java (*Cont'd*)	Batavia	Probolingo, *t* & *m n*	Small hard bean; poor roast.
			Bejreki, *t* & *m n*	Bold yellow bean; full body and flavor.
			Banjoewangi, *t* & *m n*	Heavy bean; rich flavor.
			Pamanukin, *t* & *m n*	A Liberian growth.
			Robusta, *m n*	Small, yellowish-green, round bean; quality approximately that of middling Arabian, ranking a little under good average Santos. Natural, poor roast. Washed, good roast. Fair cup.
	Bali (Dutch)	Singaraja (Boeleleng)	Bali, *m n*	Fair-size bean of little merit. Poor roast.
	Timor (Dutch & Portuguese)	Kupang	Timor, *m n*	Medium bean of good quality.
	Celebes (Dutch)		Celebes, *m n*	*In general:* With the exception of the Minahassa product, the coffees grown in the Celebes have little merit and are of inconsiderable importance.
		Menado	Minahassa, *m n*	Large, deep-yellow bean, making a handsome roast, and having an aromatic cup.
		Macassar	Boengie, *m n*	Inferior in appearance, but fair roast and cup quality.
		Bonthain	Bonthain, *m n*	Medium, flat, reddish bean, poor roast; undesirable cup.
			Sindjai, *m n*	Not commercially important.
	Moluccas (Dutch)	Ternate	Boengie, *m n*	Superior to the Java *arabica*.
	Borneo British North Sarawak Dutch	 Sandakan Kuching Banjermasin	 Borneo, *m n* " " " "	*In general:* The coffees of Borneo are mostly Liberian growths and are not a trade factor.
	New Guinea (Dutch)	Ternate (Moluccas) Dorey	New Guinea, *m n*	*In general:* These coffees are of the mild variety, but the production is commercially unimportant.
Melanesia	New Caledonia (France)	Noumea	New Caledonia La Foa	A fair Robusta coffee, but commercially unimportant.
	New Hebrides (Great Britain and France) Efate	Vila	New Hebrides	A fair coffee, but not a trade factor.

Grand Division	*Country*	*Shipping Ports*	*State, or District, Market Names and Gradings*	*Trade Values and Cup Characteristics*
Micronesia	Samoan Islands Tutuila	Pago Pago (U. S.)	Samoa	Commercially unimportant.
	Fiji (British) Vita Levu	Suva	Fiji	Medium-sized green bean; grassy cup. Not a trade factor.
	Tonga (Friendly Islands) Tongatabu	Nukualofa	Tonga	For local consumption only.
Philippine Islands (U. S.)	Luzon	Manila	Manila La Laguna, *d* Batangas, *d* Cavite, *d* Benguet, *d* Lepanto, *d* Bontoc, *d*	*In general:* Manila, or Philippine, coffee is not an important trade factor. The bean is medium size, grayish-green in color, having fine aroma and excellent flavor. It compares favorably with Costa Rica and Guatemala.
	Panay	Iloilo	Panay	No marked characteristics.
	Cebu	Cebu	Cebu	No marked characteristics.
	Palawan	Puerto Princessa	Palawan	No marked characteristics.
	Mindanao	Zamboanga	Zamboanga	Large bean; thin liquor.
Marianas or Ladrone Islands	Guam (U. S.)	Apra	Guam	No production for export.
Oceania Polynesia	Hawaiian Islands (U. S.)	Honolulu (Oahua) Hilo Kailua	Hawaiian, *m n*	*In general:* Hawaiian coffee is a large bean, blue-green to yellow-brown in color; handsome roaster, fine smooth flavor.
			Kona, *d*	Large, blue, flinty bean, mildly acid; striking character.
			Puna, *d*	Quality good but quantity small.
			Olaa, *d*	Quality good but quantity small.
			Hamakua, *d*	Quality good but quantity small.
			Maui, *d*	Production small.
			Oahu, *d*	Production small.
			Kauai, *d*	Production small.
	Society Islands (French)	Papeete	Tahiti	A fair coffee, but not a trade factor.

Grand Division	*Country*	*Shipping Ports*	*State, or District, Market Names and Gradings*	*Trade Values and Cup Characteristics*
Australia	Queensland	Cairns Mackay Brisbane	Queensland Mackay, *d*	*In general:* The coffee is from Ceylon or Coorg seed and is for local consumption. Not a commercial factor.
Africa	Egypt	Alexandria	Egyptian, *m n*	*In general:* Coffees from the upper Nile region, Kaffa Land, Anglo-Egyptian Sudan, and Nubia are generally spoken of as Egyptians. They have some Mocha characteristics, but are not important commercially.
	Anglo-Egyptian Sudan	Suakin Alexandria (Egypt)	Nubian, *m n*	Small, flinty, pale-green, oval bean; heavy body; rich flavor.
			Berber, *d*	Some superior drinking coffees come from this district.
	Eritrea (Italy)	Massowah	Abyssinian, *m n*	The coffee is of the Abyssinian type, but the output is not an important trade factor.
	Somaliland French	Jibuti	Harar, *d, t* Abyssinian, *m n*	These coffees are not grown in French Somaliland, but come from Abyssinia to Jibuti and Aden for export to Europe and America. See Abyssinia.
	British	Berbera Zeila	Harar, *d, t* Abyssinian, *m n*	Grown, as above, in Abyssinia.
	Italian	Mukdishu	Benadir, *d* & *m n*	Abyssinian type, but not an important trade factor.
	Abyssinia	Jibuti (French Somaliland) Zeila	Harar, *d, t* Abyssinian, *m n*	*In general:* The Harari coffee is more carefully cultivated and cured than the Abyssinian, which is its inferior.
		Berbera (British Somaliland) Massowah (Eritrea) Aden (Arabia)	Harar, *d, t* Harari, *m n*	The original Mocha Longberry. Large, long blue-green to yellow bean. (Graded No. 1 or No. 2, according to size) roasting with few quakers, similar to Mocha, having an excellent flavor but not quite so delicate.
			Dire-Daoua, *t*	Railway trading center for Harari and Abyssinian coffees.

Grand Division	*Country*	*Shipping Ports*	*State, or District, Market Names and Gradings*	*Trade Values and Cup Characteristics*
Africa (*Cont'd*)	Abyssinia (*Cont'd*)		Abyssinia Kaffa, *d* (Gomara)	The native coffee grown wild in this district has little commercial importance. The bean is dark gray, and it has a groundy flavor.
			Bonga, *t*	Trading center for Abyssinia.
			Jimma, *d* Jiren, *t*	Trading center for Abyssinia.
			Shoa, *d* Adis-Abeba, *t*	Mostly Abyssinian growths are exported from this trading center to Harar or Dire-Daoua.
	Kenya Colony (Formerly British East Africa)	Mombasa	Nairobi, *d* & *t* Kikuyu Kyambu	Having Mysore characteristics with a touch of Mocha flavor.
	Uganda Protectorate (British)	Mombasa	Uganda Bunganda, *d*	Greenish-gray to light-brown Robusta. Poor to fairly good liquor.
	Zanzibar Protectorate (British)	Zanzibar	Zanzibar	Medium-sized bean; full body, pleasing flavor.
	Tanganyika Territory (formerly German East Africa)	Dar-es-Salaam	East Africa, *m n* or Tanganyika, *m n*	Not a commercial factor.
	Nyasaland Protectorate (British)	Chinde (Portuguese East Africa)	Nyasaland Shire Highlands, *d* Blantyre, *d*	Some high-grown and of fine quality. Not a commercial factor.
	Rhodesia (British)	Beira (Portuguese East Africa)	Rhodesia	For local consumption. Not a trade factor.
	Portuguese East Africa	Mozambique	Mozambique	Medium-sized greenish bean, heavy body; mild and mellow in the cup.
	Natal (British)	Durban	Natal	Large, light-brown Liberian growth. Not a trade factor.
	Angola (Portugal)	Loanda	Angola	Medium-size bean, brownish color, strong in the cup.
			Encoje, *d*, *m n*	Light weight, dark brown Robusta; strong in the cup.
	Belgian Congo	Banana	Congo, *m n* Equator, *d* Aruwimi, *d* Bangala, *d* Lake Leopold, *d*	*In general:* The coffees of the Belgian Congo are mostly Liberian and Robusta growths. There is produced a medium-sized bean, making a handsome roast and having a rich cup.
	French Congo	Loango Libreville	Loango, *d*, *m n*	Formerly Encoje from Angola. Inferior to Liberian.

Grand Division	*Country*	*Shipping Ports*	*State, or District, Market Names and Gradings*	*Trade Values and Cup Characteristics*
Africa (*Cont'd*)	Nigeria (British)	Lagos	Nigeria	Commercially unimportant.
	Gold Coast (British)	Accra	Gold Coast	Not a commercial factor.
	Liberia	Monrovia	Liberian, *m n*	Large, brown bean; big, handsome roaster; strong in cup.
	Sierra Leone (British)	Freetown	Sierra Leone	*C. stenophylla*, a native growth. Not a trade factor.
	French Guinea	Konakry	Guinea, *m n*	Commercially unimportant.
	Portuguese Guinea	Bissao	Guinea, *m n*	Commercially unimportant.
	Comoro Islands (French)	Maroni	Comoro, *m n*	A wild natural caffein-free coffee (*C. humboltiana*); also found in Madagascar. Not a commercial factor.
	Madagascar (French)	Tamatave	Madagascar	Light-green *liberica* and *robusta* bean; full rich flavor.
	Réunion, formerly Bourbon (French)	St. Denis	Bourbon, *m n*	Nearest to Mocha in character (q. v.). Round and pointed bean, pale green or pale yellow. Not a trade factor.
	Mauritius (British)	Port Louis	Mauritius	Similar to Bourbon. Medium light green, full body, mild and mellow flavor. Not a trade factor.

CHAPTER XXV

FACTORY PREPARATION OF ROASTED COFFEE

Coffee roasting as a business — Wholesale coffee-roasting machinery — Separating, milling, and mixing or blending green coffee, and roasting by coal, coke, gas, and electricity — Facts about coffee roasting — Cost of roasting — Green-coffee shrinkage table — "Dry" and "wet" roasts — On roasting coffee efficiently — A typical coal roaster — Cooling and stoning — Finishing or glazing — Blending roasted coffees — Blends for restaurants — Grinding and packaging — Coffee additions and fillers — Treated coffees, and dry extracts

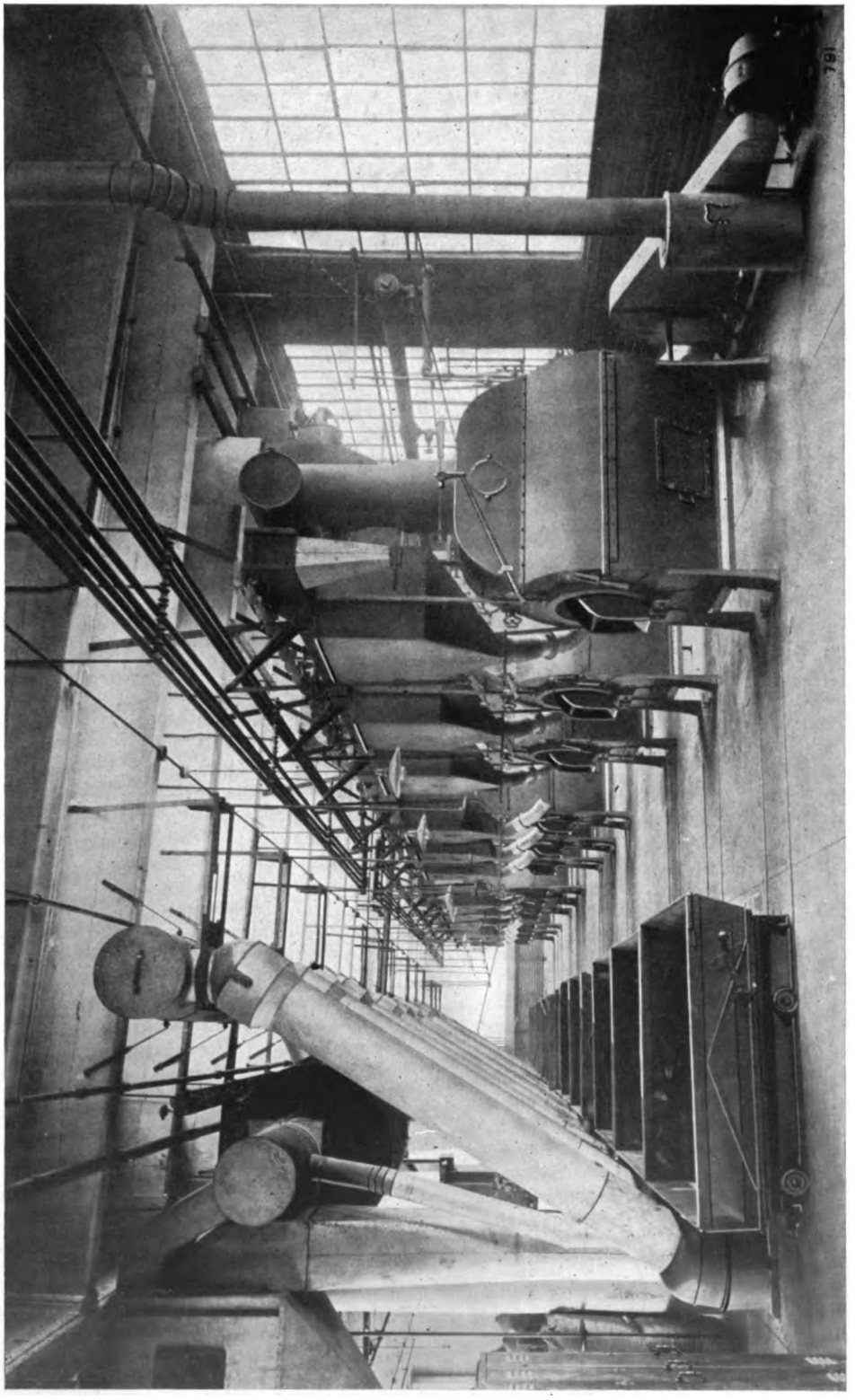
THE coffee bean is not ready for beverage purposes until it has been properly "manufactured", that is, roasted, or "cooked". Only in this way can all the stimulating, flavoring, and aromatic principles concealed in the minute cells of the bean be extracted at one time. An infusion from green coffee has a decidedly unpleasant taste and hardly any color. Likewise, an underdone roast has a disagreeable "grassy" flavor; while an overdone roast gives a charred taste that is unpalatable to the average citizen of the United States.

Coffee Roasting as a Business

In spite of the generally admitted fact that freshly roasted coffee makes the best infusion, most of the coffee used today is not roasted at or near the place where it is brewed, but in factories that are provided with special equipment for the roasting of coffee in a wholesale way. The reasons for this are various, partly relating to the mere economy of buying and manufacturing on a large scale, and partly relating to the trained skill that is needed both for selecting suitable green coffees to make a satisfactory blend, and for the roasting work itself. The proportion of consumers (including restaurants and hotels) who roast their own coffee is so small as to be negligible, at least in the United States. The average person who buys coffee today, for brewing use, never sees green coffee at all, unless as an "educational exhibit" in some dealer's display window.

The reasons just mentioned, which have made coffee roasting a real business, all tend, of course, to make the roasting establishments of large size; but this tendency is offset by the problem of distributing the roasting coffee so that it will reach the ultimate consumer in good condition. Roasting enterprises on a comparatively small scale (not by consumers, but by sufficiently expert dealers) would probably be much more numerous on account of the "fresh-roast" argument, except for the fact that coffee-roasting machines can not be installed so easily as the grinding mills, meat-choppers, and slicing machines, that find extended use in small stores. The steam, smoke, and chaff given off by the coffee as it is roasted must be disposed of by an outdoor connection, without annoying the neighbors or creating a fire hazard.

From these general remarks, it can easily be seen that the size of individual roasting establishments will vary greatly, according to the skill of the proprietor in meeting the disadvantages of working on either the smallest or the largest scale. A wholesale plant may be considered to be one in which coffee is roasted in batches of one bag or more at a time; and with this definition,



A MODERN GAS COFFEE-ROASTING PLANT WITH A CAPACITY OF 1,000 BAGS A DAY

General view of the roasting room of the Jewel Tea Co., Hoboken, N. J. The equipment consists of twelve Jubilee gas machines in four groups; each group having a smoke-suction fan, and a drag conveyor over the three feed hoppers. To the left is a line of flexible-arm cooler cars

nearly all the roasting in the United States is done in a wholesale way.

For many years the regular factory machines have been of a size suitable for roasting two bags of coffee at a time; but roasters of larger size have recently come into considerable use.

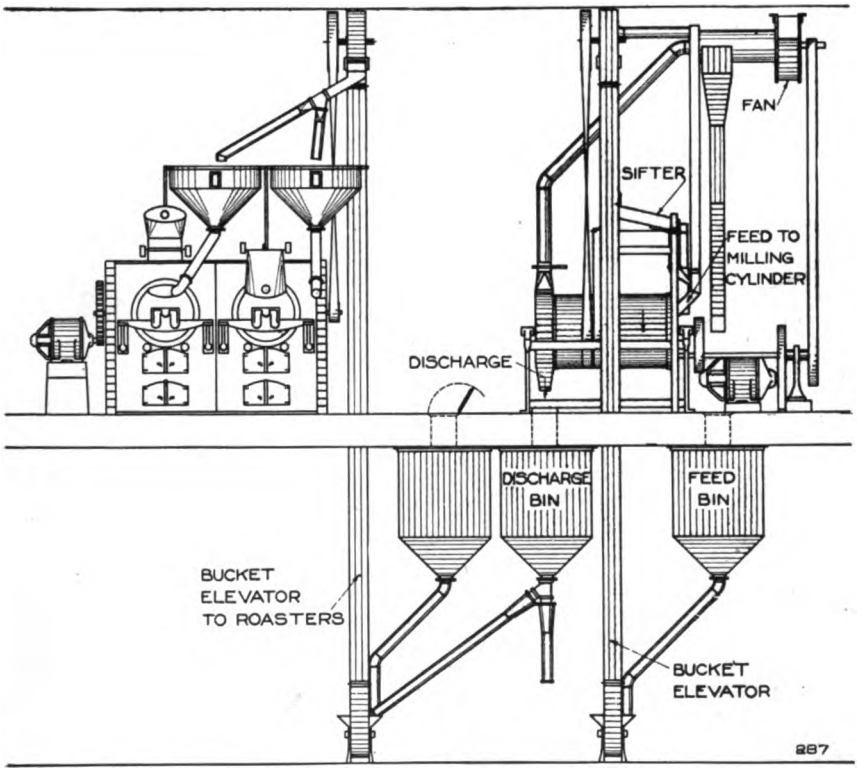
Plants treating from fifty to a hundred and fifty bags per day are the most common; but the daily capacity runs up to a thousand bags or more. The minimum cost of equipping a plant is somewhere between five thousand dollars and ten thousand dollars. The individual machines are of standard construction; but the arrangement in a particular building, especially for the larger plants, is worked out with great care and with numerous special features, so that the goods can be handled from start to finish with minimum expense for floor space, labor, power, etc.

The practical coffee roaster locates his roasting room in the top floor of his factory building, where light and ventilation are generally best. He usually has a large skylight in the roof, directly over the roasting equipment. In addition to the advantage as regards good light and the convenient discharge of smoke, steam, and odors, through the roof, the top-story location makes it possible to send the roasted coffee by gravity through the various bins which may be needed in connection with subsequent operations, such as grinding, and for temporary storage before the final packaging and shipping.

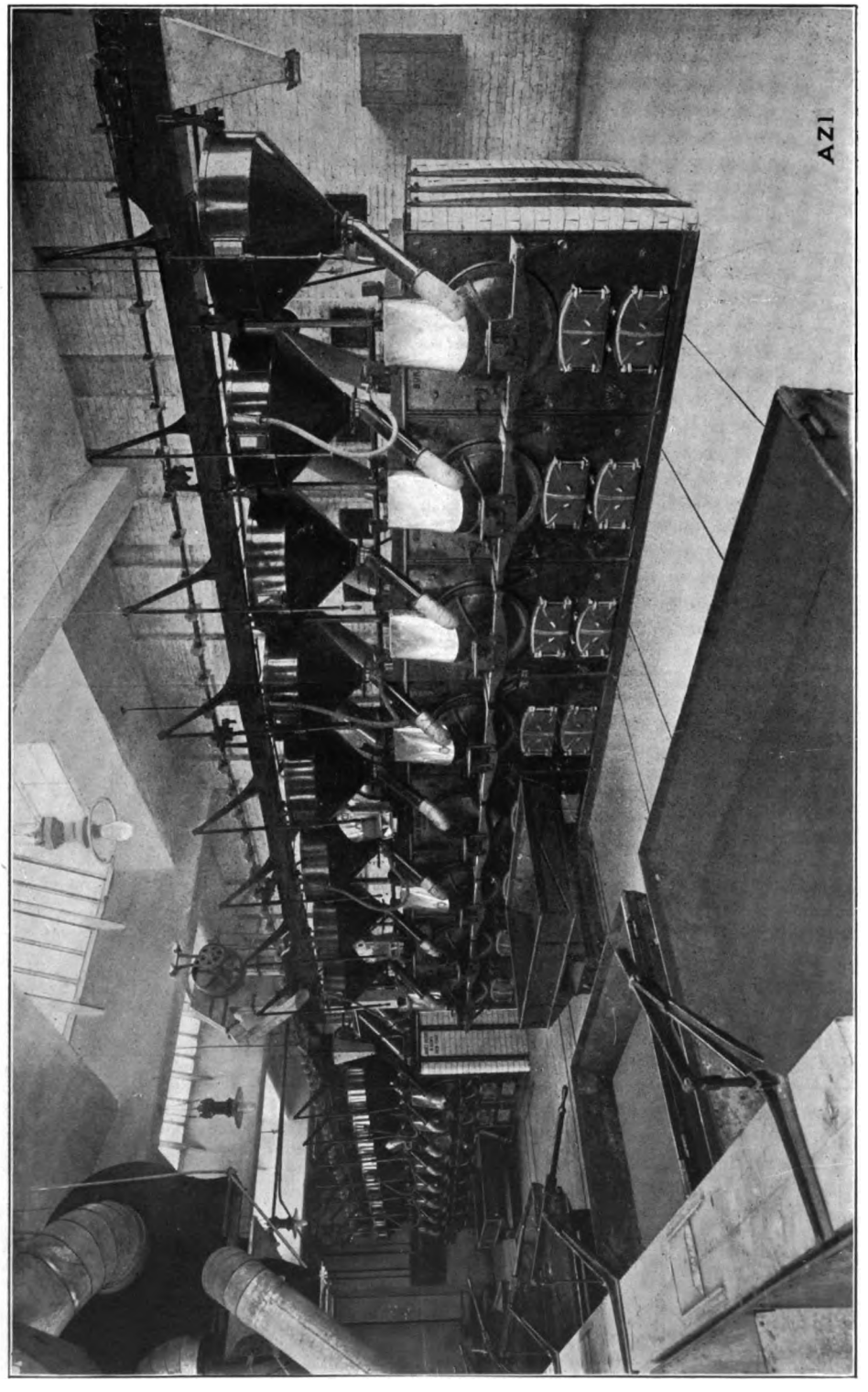
Wholesale Coffee-Roasting Machinery

The indispensable coffee operations are roasting and cooling; and in practically all United States plants the cooling is followed by "stoning". This is an air-suction operation that effects, aided by gravity, the removal of any stones or other hard material that would damage the grinding mill. The best commercial cleaning and grading of the green coffee has usually left in every bag a few small stones. These can be got rid of better after the coffee is roasted; because it is then not only lighter, but more bulky.

Besides these three operations of roasting, cooling, and stoning, the plant may have machinery for treating the coffee both



MILLING-MACHINE CONNECTIONS FOR A TWO-ROASTER PLANT



A SIXTEEN-CYLINDER COAL ROASTING PLANT IN A NEW YORK FACTORY

This is a view of the roasting room of B. Fischer & Co. and shows a battery of Burns coal roasters

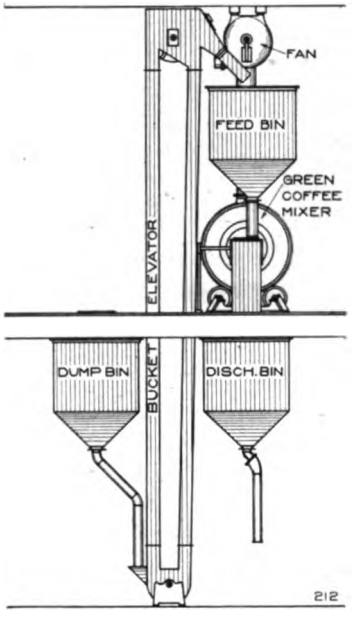
before it is roasted and after it leaves the stoner.

Treatment of the green coffee in roasting establishments is of less importance now than in years gone by; first, because most coffees now come to market more perfectly graded and cleaned than formerly; and second, because the whole-bean appearance of the coffee has become of less account, as wholesale grinding operations have increased. Nevertheless, many plants consider it highly important to have a separator for grading the coffee closely as regards the size of the beans — and particularly for the separation of round beans, or "peaberry" — as well as milling machinery for making the coffee as clean as possible before it is roasted. One green coffee operation that has lost none of its old-time importance, but on the contrary is more needed as the plants increase in size, is the mixing of different varieties of coffee — in proportions that have been decided on by sample tests — so as to get a uniform blend.

The mixer does not blend the various coffees any more surely than a good roaster cylinder will do it, but treats batches of much larger size. This means saving a great amount of labor that would be necessary for putting the desired quantity of component coffees into each individual roaster.

A proper installation of green coffee machinery requires various bins of ample capacity, and bucket elevators by which the coffee can be sent without manual labor from one operation to another. In modern plants, all the bins and elevators are constructed of metal. The separator, with its bins and elevator, may be installed independently of the rest of the plant, the graded coffee being all bagged up again and treated as new raw stock — some of it to be held for later use, or perhaps sold again unroasted. The milling machine and the mixer, however, are usually so placed and connected that the coffee can be sent from one to the other, and to the roaster feed hoppers, without any manual labor.

When the roaster sells his product in package form ready for the consumer, he will have a packaging department in which are grinding, weighing, labeling, and packing machines and equipment. In some of the more progressive plants, particularly in the United States, all the packing units are incorporated in one machine, so that the different steps in the work are carried on automatically and in one continuous operation.



GREEN-COFFEE-MIXER CONNECTIONS

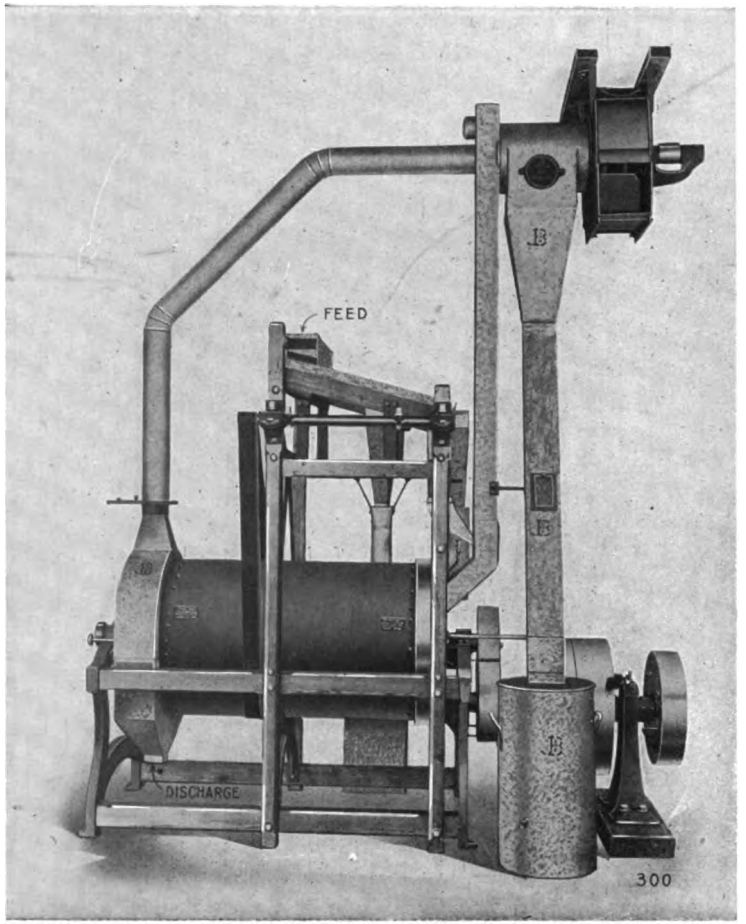
To operate at full capacity, without using the story above as well as below the mixer, requires a bucket elevator and three bins, each holding a full mixing batch. The above diagram explains this setting. The mixed coffee in the discharge bin is either drawn out into bags or sent by an elevator to a milling machine or direct to the coffee roasters. A batch ready for mixing can always be accumulated in the feed bin while the previous batch is being mixed or discharged.

The fan is usually hung to the ceiling over the mixer as indicated, and connected to the suction box by a 1-in. round pipe. The fan outlet can be carried directly out-of-doors; but the dusty discharge is objectionable in most installations, and this pipe is usually carried to a dust collector from the top of which the roof outlet is connected.

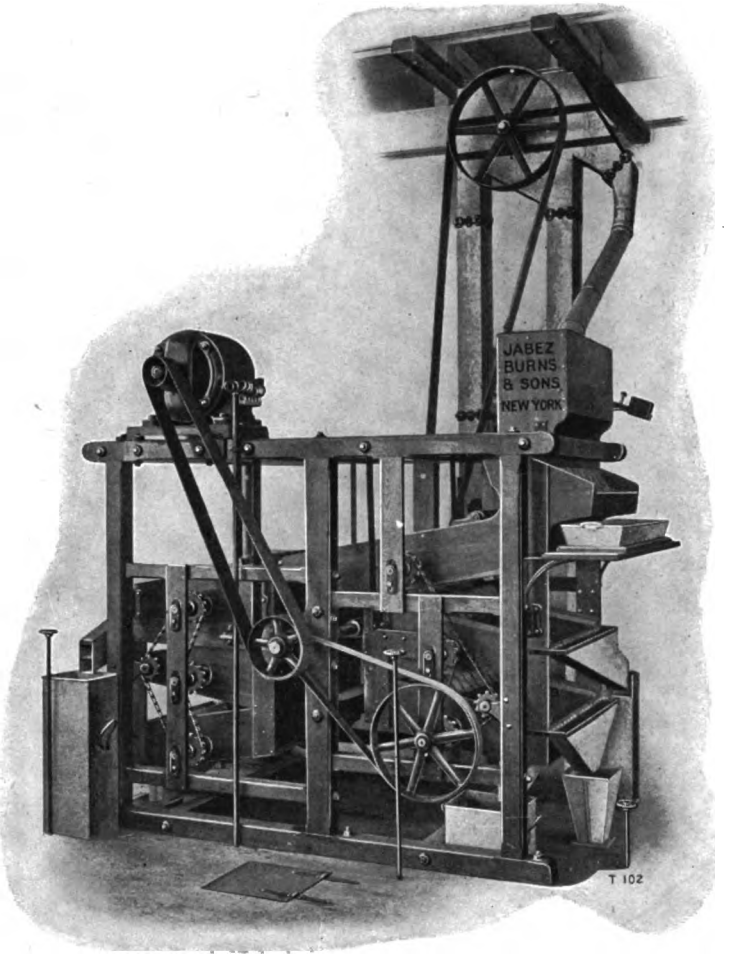
The efficient roaster-executive equips his entire plant with approved labor-saving devices. In the better establishments, the coffee is carried along by mechanical conveyors through all the operations from the first cleaning machine to the final packaging.

Separating

As already mentioned, a machine frequently found in wholesale plants is the separator, or grader. This apparatus, which is the same in principle in all countries, but varies in size and form according to local requirements, consists of a series of perforated screens. The perforations differ in size; and as the coffee is shaken on them, the small beans drop through the holes, the larger ones passing across the screen and dropping into a receptacle or chute ready for the next operation. The screens are



Green-coffee-milling machine having a capacity of forty bags of green coffee per hour; with sifter, feed-pipe suction, and a final separate suction at the discharge hopper



Green-coffee separator without fan; with feed elevator, discharge chutes, and motor drive. View of right-hand side and feed end

GREEN-COFFEE SEPARATING AND MILLING MACHINES

made to grade the beans into large and small peaberry; large, medium, and small flat beans; brokens; and other commercial sizes. The average separator will grade fifteen to twenty bags of coffee in an hour.

Milling

Milling machines, for cleaning the green coffee, operate on practically the same principle the world over, varying in capacity and details of construction. A popular type used in the United States has two metal cylinders, one set within the other, and revolving in opposite directions. The inner cylinder is ribbed with flanges, and the outer one is lined with wire cloth. As these cylinders revolve, the beans pass between them rubbing against themselves and the rough sides of the cylinders. This action serves to remove dirt and other foreign matter that may be clinging to the beans, and also gives them an attractive polish. An exhaust fan sucks away the dirt milled off in the process. This type of machine will mill about forty bags of green coffee in an hour.

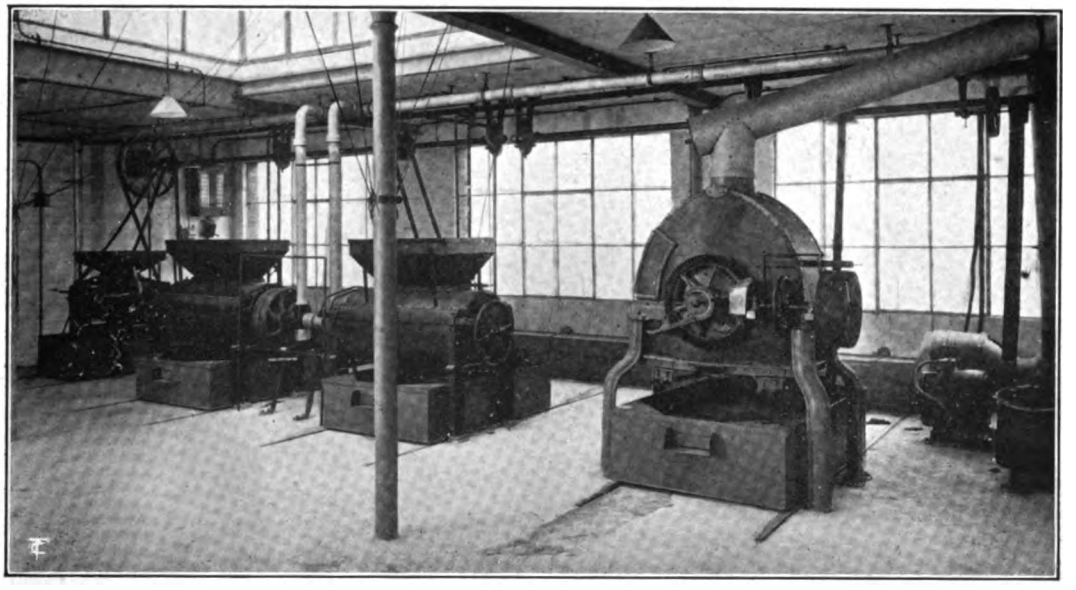
Mixing or Blending Green Coffee

Most roasters blend the different types of coffee while green. Some blend them after they have been roasted separately. When blended before roasting, the coffees are mixed by a machine built especially for that purpose. The mixing machine in general use in all countries consists of a large metal cylinder which, in wholesale operations, is revolved by the factory's general power plant or by a separate motor. The cylinder is equipped on the inside with sets of reverse-screw mixing flanges that tumble the beans around until they are thoroughly blended; and there is usually a fan attachment to remove dust. This operation serves also to smooth down and to polish the surfaces of the beans, which adds to the style of the coffee when roasted. The average blending machine will mix from ten to twenty bags of coffee at a time. The actual mixing requires less than five minutes, but a longer period is needed for feeding and discharging. This is the last of the so-called "green-coffee operations". The next step is roasting.

Roasting by Coal, Coke, Gas, and Electricity

Coffee is roasted commercially in cylinder or ball receptacles revolving in heated chambers, the degree of heat reaching about 420° Fahr. The cylinder type of roaster is invariably used in the United States; while both the cylinder and the ball types are popular in England, France, Germany, Holland, and other foreign countries.

Each roaster-man has his own opinion about the fuel that gives the best result, and throughout the world the choice lies between anthracite coal, coke, and gas; though



AN ENGLISH FOUR-MACHINE GAS COFFEE-ROASTING PLANT

The equipment includes three Morewood indirect-flame, and one quick direct-flame machines

hard wood is frequently used in countries where other fuels are not available or not economical. Electric heat has been tried for commercial roasting in Germany (1906), in England (1909), and in the United States (1918); but the experimenters have always found the cost of electric fuel to be prohibitive in competition with coal and gas. An electric roaster was demonstrated at the Food Conservation Show in New York, in 1918, at a time when the federal government was urging the necessity of conserving coal as a war economy measure. The inventor claimed that his machine would reduce roasting cost, improve the flavor and the aroma, and maintain a constant and easily controlled heat. He declared also that when roasted in his devices, less coffee was required for brewing.

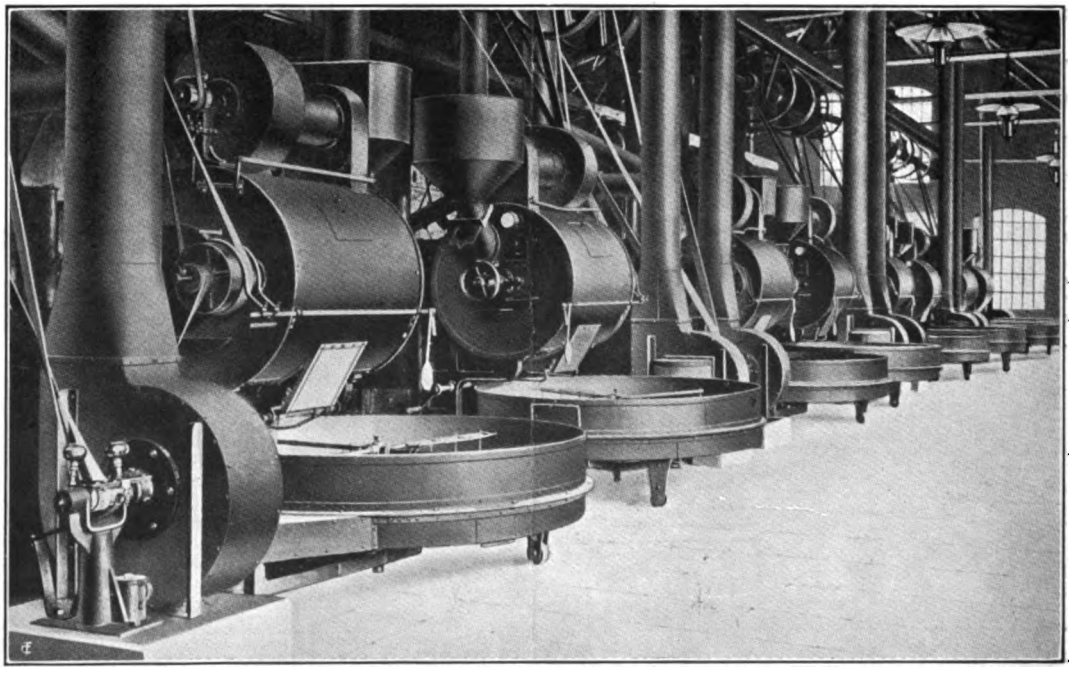
An expert coffee-roasting-machinery man who has been working on the development of a practical electric roaster says that if it were possible to bake the coffee in an oven, just as the baker does his bread, the fuel cost would then compare favorably with that of gas or coal. It is because the heat chamber must have an exhaust to release the chaff and smoke that the use of electricity to replace the heat loss proves prohibitive when compared with coal or gas.

In all types of coal and coke burning roasters, the cylinders are heated by a fire underneath; while in gas roasters, the flame may be underneath or within the cylinder itself. Roasters in which the heat is within the cylinder are known as direct-flame or inner-heated machines. All three systems are used in the United States and Europe.

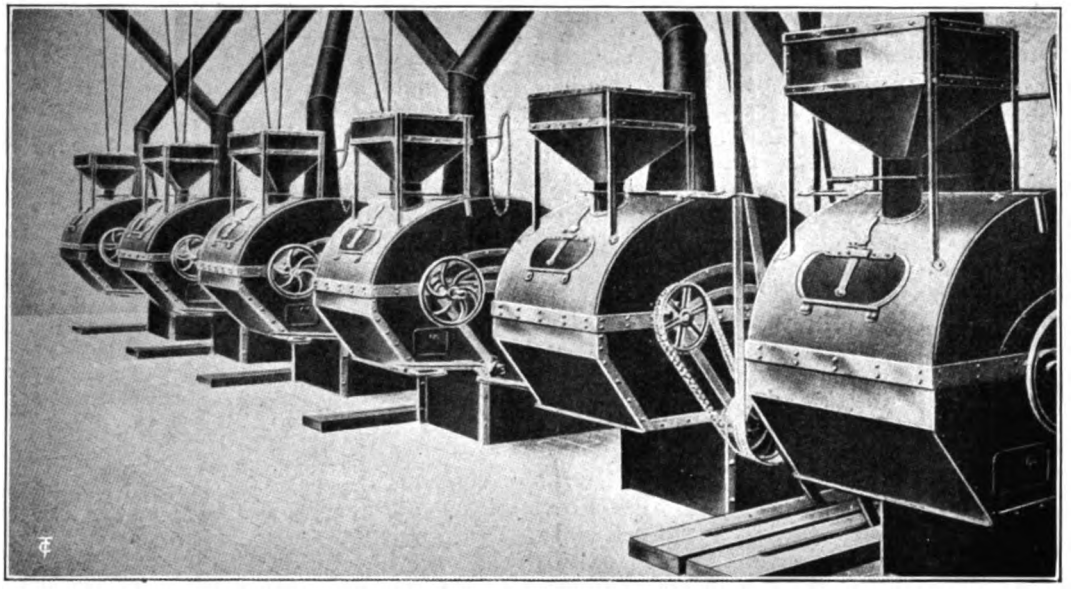
Facts About Coffee Roasting

The modern commercial roasting outfit is as near fool-proof as human genius has been able to devise. The more advanced types are almost automatic in operation, and are designed to insure uniformity of roasts. In such machines the green coffee is conveyed to the roasting cylinder by means of bucket elevators, which pour the beans into a feed hopper. From the feed hopper, the coffee is dumped through the opening in the front head-piece into the cylinder. The cylinder is perforated, and has inside flanges which keep tossing the coffee about while the cylinder revolves, so that the coffee will not burn during the roasting process.

To roast coffee by coal or coke usually requires from twenty-five to thirty minutes, depending on the moisture-content of the beans; whether they are spongy or flinty; whether a light, medium, or dark



GERMAN GAS COFFEE-ROASTING PLANT EQUIPPED WITH IDEAL-RAPID MACHINES



FRENCH GAS COFFEE-ROASTING PLANT EQUIPPED WITH MODERNE MACHINES

roast is desired; and on the skill of the operator. Gas roasting requires from fifteen to twenty minutes. The quicker the roast, the better the coffee, is the opinion of many trade leaders, one of whom[1] says:

> It is a growing belief that in roasts of short duration the largest percentage of the aromatic properties is retained. A slow roast has the effect of baking and does not give full development; also, slow roasts seldom produce bright roasts, and they usually make the coffee hard instead of brittle, even when the color standard has been attained.

While coffees of widely varying degrees of moisture require somewhat different treatment, the consensus of opinion is that the best results are obtained from a slow fire at the beginning, until some of the moisture has been driven off, when the stronger application of heat may be given for development. An intense heat in the beginning often results in "tipping", or charring, the little germ at the end, the most sensitive part of the bean.

Scorched beans have been caught at some point in the cylinder, often in a bent flange. Burning on one face, sometimes called "kissing the cheeks", is caused by the too rapid revolution of the cylinder, so that some of the coffee "carries over". In the best practise, crowding of cylinders is avoided; many roasters making it a rule not to exceed ninety percent of the rated capacity of the cylinder.

Those operating gas roasters may effect a fuel economy by running a low grade coffee in the cylinder after the last roast has been drawn and the gas extinguished; five minutes' revolution absorbs the heat and drives off a proportion of moisture. The coffee, which may then be left in the cylinder, requires less time and fuel in the morning, and the roast is finished while the cylinder is warming up. Double roasting brightens a roast, but is a detriment to the cup quality. A dull roasting coffee may be improved by revolving the green coffee in a cylinder without heat for twenty minutes, which has the effect of milling.

The use of a small amount of water upon roasts gives better control by checking the roast at the proper point — the crucial time of its greatest heat; also, it swells and brightens the coffee, and tends to close the outer pores. While the addition of water is open to abuse, few roasters have soaked their coffees enough to offset the natural shrinkage as much as three or four percent. Such practise would result greatly to the detriment of the cup quality.

There is no universal standard for the degree to which coffee should be roasted. In the United States, there are demands for all degrees; from the light roast, in favor in England, to the extremely dark roast in vogue in France, Italy, Brazil,

[1] Wilhelm, R. C. *Tea and Coffee Trade Jour.*, 1916 (vol. xxxi: no. 5: p. 429).

Turkey, and in the producing countries. The North American trade recognizes these different roasts: light, cinnamon, medium, high, city, full city, French, and Italian. The city roast is a dark bean, while full city is a few degrees darker. In the French roast, the bean is cooked until the natural oil appears on the surface; and in the Italian, it is roasted to the point of actual carbonization, so that it can be easily powdered. Germany likes a roast similar to the French type; while Scandinavia prefers the high Italian roast.

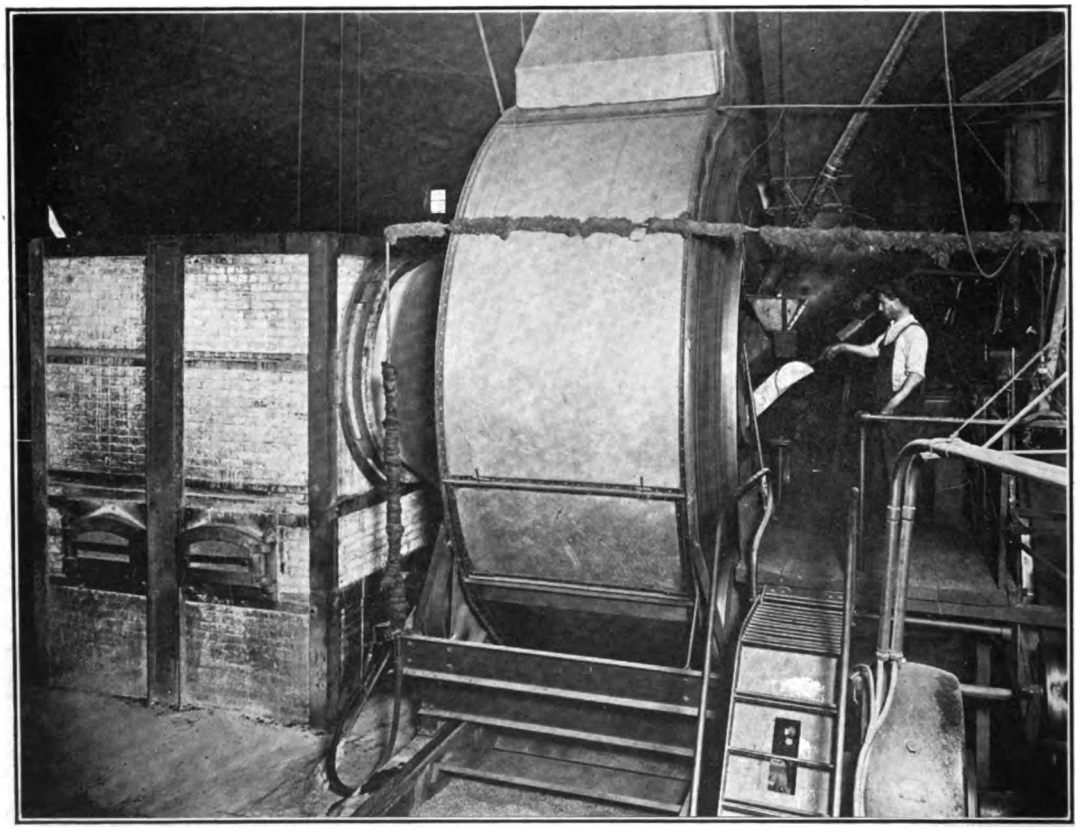
In the United States, the lighter roast is favored on the Pacific coast; the darkest, in the South; and a medium-colored roast, in the Eastern states. The cinnamon roast is most favored by the trade in Boston.

While coffee roasting in the United States usually takes from fifteen to thirty minutes, depending on the fuel and the machine employed, manufacturers of gas machines on the German market claim to roast it in superior fashion in from three and a half to ten minutes.[2] This subject is discussed more in detail in chapter XXXIV.

Coffee loses weight during the roasting process, the loss varying according to the degree of roasting and the nature of the bean. Coffee roasters figure, however, that the average loss is sixteen percent of the weight of the green bean. It has been estimated that one hundred pounds of coffee in the cherry produces twenty-five pounds in the parchment; that one hundred pounds in parchment produces eighty-four pounds of cleaned coffee; and that one hundred pounds of cleaned coffee produces eighty-four pounds roasted.

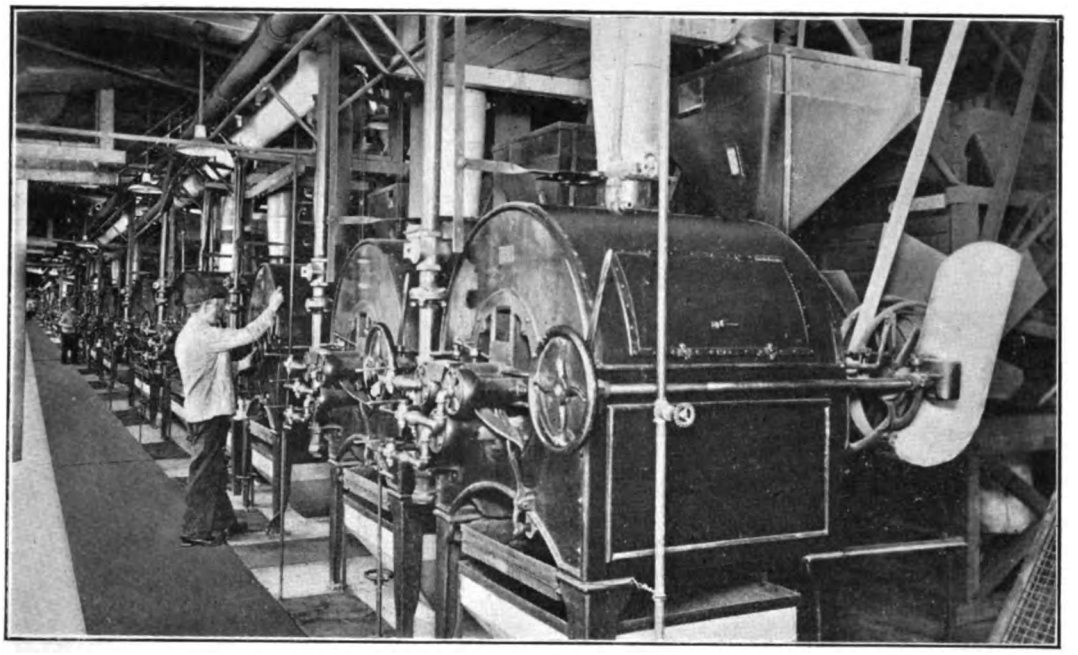
During the roasting process the coffee undergoes a great chemical change. After

[2] Willcox, O. W. *Tea and Coffee Trade Jour.*, 1914 (vol. xxvi: no. 2: p. 38).



JUMBO COFFEE ROASTER, IN THE ARBUCKLE COFFEE-ROASTING PLANT, NEW YORK

There are four of these machines. The cylinders are twelve feet in diameter, six feet deep, and can roast 5,000 pounds of coffee every half-hour. The hard-coal brick furnace is seen at the left, from which a blower forces the heated air through a pipe into the revolving cylinder of coffee. The coffee is fed from above and is emptied into the cooling pans beneath



AN EIGHT-CYLINDER GAS COFFEE-ROASTING PLANT

A view of Reid, Murdoch & Co.'s roasting room, Chicago, equipped with Monitor machines

it has been in the cylinder a short time, the color of the bean becomes a yellowish brown, which gradually deepens as it cooks. Likewise, as the beans become heated, they shrivel up until about half done, or at the "developing" point. At this stage, they begin to swell, and then "pop open", increasing fifty percent in bulk.[1] This is when the experienced roasterman turns on all the heat he can command to finish the roasting as quickly as possible.

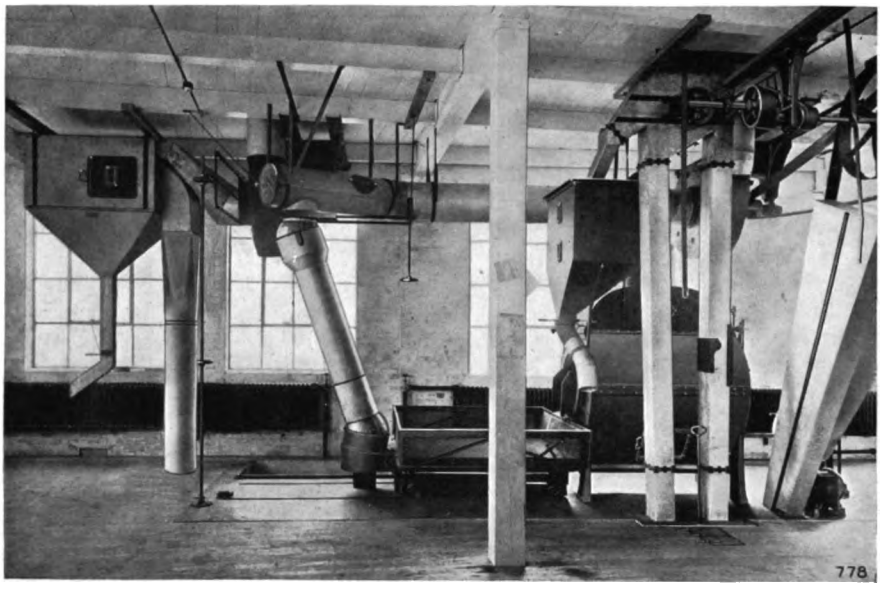
"Dry" and "Wet" Roasts

At frequent intervals, he thrusts his "trier" — an instrument shaped somewhat like an elongated spoon — into the cylinder, and takes out a sample of coffee to compare with his type sample. When the coffee is done, he shuts off the heat and checks the cooking by reducing the temperature of the coffee and of the cylinder as quickly as can be done. In the wet roast method he will spray the coffee, while the cylinder is still revolving, with three to four quarts of water to every 130 pounds of coffee. In the dry method he depends altogether upon his cooling apparatus.

Roasters generally are not in favor of the excessive watering of coffee in and after the roasting process for the purpose of reducing shrinkage. "Heading" the coffee, or checking the roast before turning it out of the roasting cylinder, is quite another matter and is considered legitimate. Where coffees are watered in the cylinder at the close of the roast to reduce the shrinkage, it is possible to get back only about four percent of the shrinkage by such treatment and the practise is frowned upon by the best roasters.

Generally speaking, water is turned into the roasting cylinder to quench the roast. The amount varies with the style of machine, whether gas or coal. Usually the water turns to steam, and the result is not an absorption of the water but a momentary checking of the roast with a tendency to swell and to brighten the coffee. This is, comparatively speaking, a "dry roast", but not an absolutely dry roast. It is doubtful if more than one percent of American coffee roasters employ an absolutely "dry" roast — it does not give satisfactory results. The word has been abused for advertising purposes. Of course, a dry roasted coffee is a better article for making a satisfactory beverage than one that has been soaked with water; but the

[1] Zinsmeister. L. G. *Tea and Coffee Trade Jour.*, 1914 (vol. xxvii: no. 6: pp. 358 - 362).



UPPER-STORY VIEW OF A JUBILEE PLANT, SHOWING ROASTER, COOLER, AND STONER EQUIPMENT

The parts under roasting-room floor are shown in the illustration below

LOWER-STORY VIEW OF THE SAME PLANT FROM ABOUT THE SAME ANGLE

Showing connection from floor hopper to stoner on the left, and suspended bucket-elevator boot with four-bag dump hopper on the right

COMPLETE GAS COFFEE-PLANT INSTALLATION

word "dry" must be given a definite meaning, which the trade generally will agree to uphold, if it is to have any real meaning or value to the consumer. Until some standard for roasted coffee shall be established, it is to be feared the term "dry roast" will continue to be used for coffee roasted by almost any other process.

The Bureau of Chemistry held a hearing in 1914 at Washington, at which the question of a ruling on watering coffees was discussed. The trade was well represented, but no agreement was reached. It was deemed inadvisable to make a definite rule on the watering of coffee; because the water content can not be controlled, as the bean starts to absorb moisture as soon as it leaves the roaster.

On Roasting Coffee Efficiently

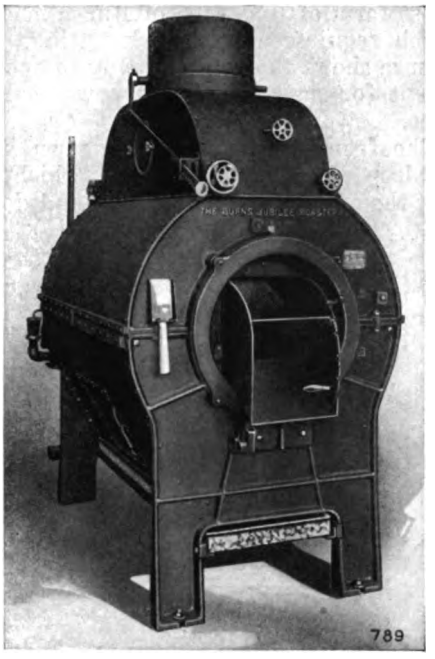
A. L. Burns, New York, is well qualified to speak on this subject. He says:

Roasting coffee is not so difficult a matter as is often claimed by operators and "experts" who seek thus to magnify their importance; but it is nevertheless a process about which a great deal may be learned in the school of practical experience. With one of our modern machines anybody with ordinary intelligence and nerve can take off a roast after one trial which would pass muster in many establishments, but that same person applying himself to the roasting job for a week will either be turning out vastly better roasts or will have demonstrated that he never can excel as a roasterman.

Modern coffee roasting machines provide for easy control of the heat (from coal, coke, or gas fuel), for constantly mixing the coffee in such a manner that the heat is transmitted uniformly to the entire batch, for carrying away all steam and smoke rapidly, for easy testing of the progress of the roast, and for immediate discharge when desired. The operator's problem therefore is the regulation of the heat and deciding just when the desired roasting has been accomplished.

If all coffees were alike, roasting would soon be almost automatic. In some plants most of the work is on one uniform grade or blend. But coffees which vary greatly in moisture-content, in flinty or spongy nature, and in various other characteristics, will puzzle the operator until he establishes a personal acquaintance with them in various combinations in repeated roasting operations. The roasterman therefore must be able to observe closely, to draw sensible conclusions, and to remember what he learns. Roasting coffee is work of a sort which anybody can do, which a few people can do really well, and no one so well but that further improvement is possible.

There is no absolute standard of what the best roasting results are. Some dealers want the coffee beans swelled up to the bursting point, while others would object to so showy a development. Some care nothing at all about appearance as compared with cup value, while others insist on a bright style even at some sacrifice of quality. Business judgment must decide what goods can be sold most profitably.



BURNS JUBILEE GAS ROASTER

The loss of coffee in weight in the roasting operation, or shrinkage as it is called, is a matter which offers opportunities for false claims of advantage in roasting processes. Anybody can see that if just as good roasted coffee could be produced with a lessened shrinkage there would be a chance for a decided increase in profits. It is a sort of finding-money proposition which always turns out to be too good to be true. The purpose of roasting coffee is to produce an article entirely different from green coffee, which is accomplished mainly by driving out moisture. If coffee is roasted thoroughly, inside as well as outside, so as to give the greatest roasted coffee value, it must sustain a proper loss in weight which there is no legitimate way to avoid. The amount of shrinkage varies a great deal with the kind of coffee and its age, also with the kind of roasting desired.

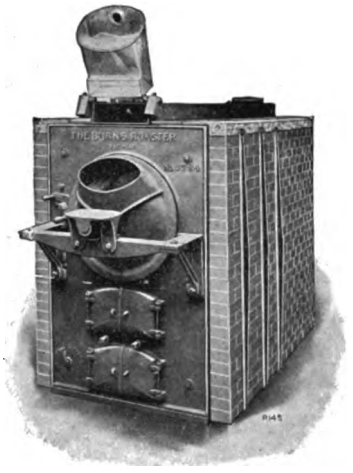
Adding a little water to the coffee at the end of the operation has the advantage of checking the roast at the desired point and helping to swell and brighten the coffee, but it is a practice which is sometimes abused by soaking the coffee with water so as to reduce the shrinkage. This is done either dishonestly, to steal coffee which belongs to somebody else, or foolishly; for the heavier coffee has a lessened cup value which more than counterbalances the apparent gain.

A Typical Coal Roaster

A typical United States coal roaster is shown in the accompanying cut. It is the

latest form of that type of Burns machine which requires a brickwork setting. The picture shows the roaster ready to operate, except for smoke pipe and power connections.

The front of the machine shown has a cast-iron plate having brackets which support the cylinder front bearing, and double



BURNS COAL ROASTER WITH BRICKWORK SETTING

fire doors below for the furnace and the ashpit. The movable part of the roaster is hidden by the front head, a heavy casting which stands still except when moved by hand through a half-turn for feeding and discharging.

The cylinder is driven by gears at the back, revolving constantly at uniform speed. The inside of the cylinder is arranged with reverse-spiral flanges which mix the coffee perfectly and make uneven roasting impossible; and they discharge promptly every grain of coffee when the front-head opening is turned to the lower position. The roaster is generally operated with coal fuel, but can be used with gas by installing a suitable burner under the cylinder.

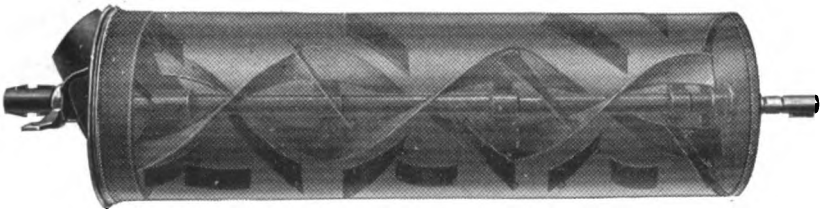
COST CARD FOR ROASTERS

Showing the value added to the cost of green coffee by roasting

By A. C. Aborn

BASIS: 16 percent Shrinkage.
¼ cent a pound for Roasting.

Cost Green, per Lb. Cents	Cost Roasted, per Lb. Cents	Cost Green, per Lb. Cents	Cost Roasted, per Lb. Cents	Cost Green, per Lb. Cents	Cost Roasted, per Lb. Cents	Cost Green, per Lb. Cents	Cost Roasted, per Lb. Cents
5	6.85	12	15.18	19	23.51	26	31.85
5⅛	6.99	12⅛	15.33	19⅛	23.66	26⅛	31.99
5¼	7.14	12¼	15.48	19¼	23.81	26¼	32.14
5⅜	7.29	12⅜	15.63	19⅜	23.96	26⅜	32.29
5½	7.44	12½	15.77	19½	24.11	26½	32.44
5⅝	7.59	12⅝	15.92	19⅝	24.26	26⅝	32.59
5¾	7.74	12¾	16.07	19¾	24.40	26¾	32.74
5⅞	7.89	12⅞	16.22	19⅞	24.55	26⅞	32.89
6	8.04	13	16.37	20	24.70	27	33.04
6⅛	8.19	13⅛	16.52	20⅛	24.85	27⅛	33.18
6¼	8.33	13¼	16.67	20¼	25.00	27¼	33.33
6⅜	8.48	13⅜	16.82	20⅜	25.15	27⅜	33.48
6½	8.63	13½	16.97	20½	25.30	27½	33.63
6⅝	8.78	13⅝	17.11	20⅝	25.45	27⅝	33.78
6¾	8.93	13¾	17.26	20¾	25.60	27¾	33.93
6⅞	9.08	13⅞	17.41	20⅞	25.75	27⅞	34.08
7	9.23	14	17.56	21	25.89	28	34.23
7⅛	9.37	14⅛	17.71	21⅛	26.04	28⅛	34.38
7¼	9.52	14¼	17.86	21¼	26.19	28¼	34.52
7⅜	9.67	14⅜	18.01	21⅜	26.34	28⅜	34.67
7½	9.82	14½	18.15	21½	26.49	28½	34.82
7⅝	9.97	14⅝	18.30	21⅝	26.64	28⅝	34.97
7¾	10.12	14¾	18.45	21¾	26.79	28¾	35.12
7⅞	10.27	14⅞	18.60	21⅞	26.93	28⅞	35.27
8	10.42	15	18.75	22	27.08	29	35.42
8⅛	10.57	15⅛	18.90	22⅛	27.23	29⅛	35.57
8¼	10.71	15¼	19.05	22¼	27.38	29¼	35.71
8⅜	10.86	15⅜	19.20	22⅜	27.53	29⅜	35.86
8½	11.01	15½	19.35	22½	27.68	29½	36.01
8⅝	11.16	15⅝	19.49	22⅝	27.83	29⅝	36.16
8¾	11.31	15¾	19.64	22¾	27.98	29¾	36.31
8⅞	11.46	15⅞	19.79	22⅞	28.13	29⅞	36.46
9	11.61	16	19.94	23	28.27	30	36.61
9⅛	11.76	16⅛	20.09	23⅛	28.42	30⅛	36.76
9¼	11.90	16¼	20.24	23¼	28.57	30¼	36.90
9⅜	12.05	16⅜	20.39	23⅜	28.72	30⅜	37.05
9½	12.20	16½	20.54	23½	28.87	30½	37.20
9⅝	12.35	16⅝	20.68	23⅝	29.02	30⅝	37.35
9¾	12.50	16¾	20.83	23¾	29.17	30¾	37.50
9⅞	12.65	16⅞	20.98	23⅞	29.32	30⅞	37.65
10	12.80	17	21.13	24	29.46	31	37.80
10⅛	12.95	17⅛	21.28	24⅛	29.61	31⅛	37.95
10¼	13.10	17¼	21.43	24¼	29.76	31¼	38.10
10⅜	13.24	17⅜	21.58	24⅜	29.91	31⅜	38.24
10½	13.39	17½	21.73	24½	30.06	31½	38.39
10⅝	13.54	17⅝	21.87	24⅝	30.21	31⅝	38.54
10¾	13.69	17¾	22.02	24¾	30.36	31¾	38.69
10⅞	13.84	17⅞	22.17	24⅞	30.51	31⅞	38.84
11	13.99	18	22.32	25	30.65	32	38.90
11⅛	14.14	18⅛	22.47	25⅛	30.80	32⅛	39.14
11¼	14.29	18¼	22.62	25¼	30.95	32¼	39.29
11⅜	14.43	18⅜	22.77	25⅜	31.10	32⅜	39.43
11½	14.58	18½	22.92	25½	31.25	32½	39.58
11⅝	14.73	18⅝	23.07	25⅝	31.40	32⅝	39.73
11¾	14.88	18¾	23.21	25¾	31.55	32¾	39.88
11⅞	15.03	18⅞	23.36	25⅞	31.70	32⅞	40.03



OPEN PERFORATED CYLINDER WITH FLEXIBLE BACK HEAD

A GREEN COFFEE SHRINKAGE TABLE

Showing shrinkage in roasting of raw coffee in quantities from sixty pounds up to three hundred pounds, and at six different shrinkage percentages

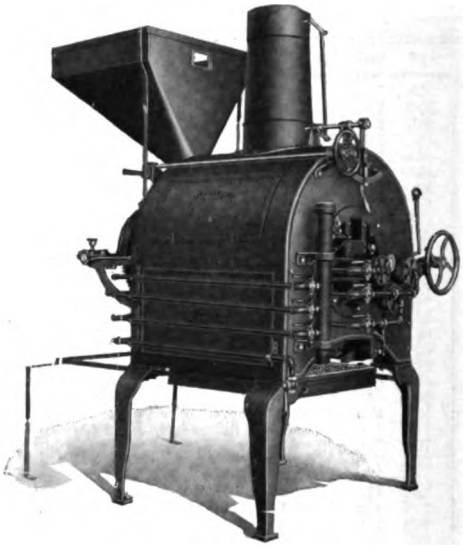
Compiled by R. C. Wilhelm, New York

RAW	12%	13%	14%	15%	16%	17%	RAW	12%	13%	14%	15%	16%	17%	RAW	12%	13%	14%	15%	16%	17%
60	52¾	52¼	51½	51	50½	49¾	140	123¼	121¾	120½	119	117½	116¼	220	193½	191½	189¼	187	184½	182½
61	53¾	53	52½	51¾	51¼	50¾	141	124	122¾	121¼	119¾	118½	117	221	194½	192¼	190	187¾	185¾	183½
62	54½	54	53¼	52¾	52	51½	142	125	123½	122	120¾	119¼	117¾	222	195¼	193¼	191	188¾	186½	184¼
63	55½	54¾	54	53½	53	52¼	143	125¾	124½	123	121½	120	118¾	223	196¼	194	191¾	189½	187¼	185
64	56¼	55¼	55	54½	53¾	53	144	126¾	125¼	123¾	122½	121	119¼	224	197	195	192¾	190½	188¼	186
65	57¼	56½	56	55¼	54½	54	145	127½	126¼	124¾	123¼	121¾	120¼	225	198	195¾	193½	191¼	189	186¾
66	58	57½	56¾	56	55½	54¾	146	128½	127	125½	124	122¾	121¼	226	199	196½	194¼	192	189¾	187½
67	59	58¼	57¾	57	56¼	55½	147	129¼	128	126½	125	123½	122	227	199¾	197½	195¼	193	190¾	188¾
68	59¾	59¼	58½	57¾	57	56½	148	130¼	128¾	127¼	125¾	124¼	122¾	228	200¾	198¼	196	193¾	191½	189¼
69	60¾	60	59¼	58¾	58	57¼	149	131	129¾	128¼	126¾	125¼	123¾	229	201½	199¼	197	194¾	192¼	190
70	61½	61	60¼	59½	58¾	58	150	132	130½	129	127½	126	124½	230	202½	200	198	195½	193½	191
71	62½	61¾	61	60¼	59¼	59	151	133	131¼	129¾	128¼	126¾	125¼	231	203¼	201	198¾	196½	194¼	192
72	63¼	62¾	62	61	60½	59¾	152	133¾	132¼	130¾	129¼	127½	126¼	232	204	202	199½	197	195	192½
73	64¼	63½	62¾	62	61¼	60½	153	134¾	133	131½	130	128¼	127	233	205	202¾	200¼	198	195¾	193¼
74	65	64½	63¾	63	62¼	61½	154	135½	134	132½	131	129¼	127¾	234	206	203½	201	199	196½	194
75	66	65¼	64½	63¾	63	62¼	155	136½	134¾	133¼	131¾	130¼	128¾	235	206¾	204½	202	199¼	197½	195
76	67	66	65¼	64½	63¾	63	156	137¼	135¾	134¼	132½	131	129½	236	207½	205	203	200½	198	196
77	67¾	67	66¼	65½	64¾	64	157	138¼	136½	135	133½	132	130¼	237	208½	206¼	203¾	201½	199	196¾
78	68¾	68	67	66¼	65½	64¾	158	139	137½	136	134¼	132¾	131¼	238	209½	207	204½	202¼	200	197½
79	69½	68¼	68	67¼	66½	65¾	159	140	138¼	136¾	135¼	133½	132	239	210¼	208	205½	203¼	200¾	198¼
80	70½	69¾	68¾	68	67¼	66½	160	140¾	139¼	137½	136	134½	132¾	240	211	208¾	206¼	204	201½	199
81	71¼	70½	69¾	69	68	67¼	161	141¾	140	138½	136¾	135¼	133¾	241	212	209¾	207¼	204¾	202½	200
82	72¼	71½	70½	69¾	69	68	162	142½	141	139¼	137¾	136	134½	242	213	210½	208	205¾	203	201
83	73	72¼	71½	70½	69¾	69	163	143½	141¾	140¼	138½	137	135¼	243	213¾	211½	208	206½	204	201¾
84	74	73¼	72¼	71½	70½	69¾	164	144¼	142¾	141	139½	137¾	136	244	214¾	212¼	210	207¼	205	202½
85	74¾	74	73¼	72¼	71¼	70½	165	145¼	143½	142	140¼	138½	137	245	215½	213	210¾	208¼	205¾	203¼
86	75¾	74¾	74	73¼	72¼	71½	166	146	144½	142¾	141	139½	137¾	246	216½	214	211½	209	206¾	204
87	76½	75¾	75	74	73¼	72¼	167	147	145¼	143½	142	140¼	138½	247	217¼	215	212½	210	207¼	205
88	77½	76½	75¾	74¾	73¾	73	168	147¾	146¼	144½	142¾	141	139½	248	218	216	213	211	208	206
89	78½	77½	76½	75¾	74¾	74	169	148¾	147	145¼	143¾	142	140¼	249	219	216¾	214½	211½	209¼	207
90	79¼	78¼	77½	76½	75¾	75	170	149½	148	146¼	144½	142¼	141	250	220	217½	215	212½	210	207½
91	80¼	79¼	78¼	77½	76½	75½	171	150½	148¾	147	145¼	143¾	142	251	221	218¼	215¾	213¼	210¾	208¼
92	81	80	79¼	78¼	77¼	76½	172	151¼	149¾	148	148¼	144½	142¾	252	222	219	216¼	214	212	209
93	82	81	80	79	78¼	77¼	173	152¼	150½	148¾	147	145¼	143½	253	222½	220	217½	215	212½	210
94	82¾	81¾	80¾	80	79	78	174	153	151½	149¾	148	146¼	144½	254	223½	221	218½	216	213¼	211
95	83¾	82¾	81¾	80¾	79¾	79	175	154	152¼	150½	148¾	147	145¼	255	224¼	222	219¼	216¾	214¼	211½
96	84½	83½	82½	81¾	80¾	79¾	176	155	153	151¼	149½	147¾	146	256	225	223	220	218	215 -	212
97	85½	84½	83½	82½	81½	80½	177	155¾	154	152¾	150½	148¾	147	257	226	223¾	221	218¼	216	213
98	86¾	85¼	84¼	83¼	82½	81½	178	156¾	154¾	153	151¾	149½	147¾	258	227	224½	222	219½	216¾	214
99	87¼	86¼	85¼	84¼	83¼	82¼	179	157½	155¾	154	152¼	150¼	148½	259	228	225¼	222¾	220¼	217½	215
100	88 -	87	86	85	84	83	180	158½	156½	154¾	153	151¼	149½	260	229	226	224	221	218	216
101	89	87½	86½	85½	84½	83½	181	159¼	157½	155¾	153¾	152	150¼	261	229¾	227	225	222	219	216¾
102	89¾	88¾	87¾	86¾	85¾	84¾	182	160¼	158¼	156½	154¾	153	151	262	230½	228	225½	222¾	220	217½
103	90¾	89¾	88¾	87½	86½	85½	183	161	159¼	157½	155½	153¾	152	263	231½	229	226¼	223½	221	218¼
104	91½	90½	89½	88½	87½	86½	184	162	160	158¼	156½	154½	152¾	264	232	230	227	224	222	218
105	92½	91½	90¼	89¼	88¼	87¼	185	162¾	161	159	157¼	155¼	153½	265	233	230¾	228	225	222¼	220
106	93¼	92¼	91¼	90¼	89	88	186	163¾	161¼	160	158	156¼	154½	266	234	231½	228¾	226	223½	220¾
107	94¼	93¼	92	91	90	88¾	187	164½	162¾	160¾	159	157	155¼	267	235	232¼	229½	227	224¼	221½
108	95	94	93	91¾	90¾	89¾	188	165½	163½	161¾	160	158	156	268	236	233	230½	228	225	222
109	96	95	93¾	92¾	91½	90½	189	166¼	164½	162½	160¾	158¾	156¾	269	236¾	234	231¼	228½	226	223¼
110	96¾	95¾	94¾	93½	92½	91¾	190	167¼	165¼	163½	161½	159½	157¾	270	237½	235	232	229½	226¾	224
111	97¾	96¾	95½	94½	93¼	92¼	191	168	166¼	164¼	162¼	160½	158½	271	238½	235¾	233	230¼	227½	225
112	98½	97½	96½	95¼	94¼	93	192	169	167	165	163¼	161¼	159¼	272	239	237	234	231	228	226
113	99½	98¼	97¼	96	95	93¾	193	169¾	168	166	164	162	160¼	273	240	237¾	234½	232	229	226¾
114	100½	99¼	98	97	95¾	94¾	194	170¾	168¾	166¾	165	163	161	274	241	238½	235½	233	230	227½
115	101¼	100½	99	97¾	96¾	95½	195	171½	169¾	167¾	165¾	163¾	161¼	275	242	239¼	236½	233¾	231	228¼
116	102	101	99¾	98½	97½	96¼	196	172½	170½	168½	166½	164¾	162¾	276	243	240	237¼	234½	232	228
117	103	101¾	100½	99½	98¼	97	197	173¼	171½	169½	167½	165½	163½	277	243¾	241	238¼	235½	232¾	230
118	103¾	102½	101½	100¼	99	98	198	174¼	172¼	170¼	168¼	166¼	164¼	278	244½	242	239	236½	233½	230¾
119	104¾	103½	102¼	101	100	98¾	199	175	173¼	171¼	169¼	167¼	165¼	279	245½	243	240	237	234½	231½
120	105½	104½	103	102	101	99½	200	176	174	172	170	168	166	280	246½	243¾	241	238	235¼	232½
121	106½	105¼	104	102¾	101½	100½	201	177	174¾	173	170¾	168¾	166¾	281	247¼	244½	241¼	238¼	236	233¼
122	107½	106	105	103½	102½	101½	202	177¾	175¾	173¾	171¾	169¾	167¾	282	248	245½	242½	239½	237	234
123	108¼	107	105¾	104½	103¼	102	203	178¾	176½	174½	172½	170½	168½	283	249	246¼	243¼	240½	237¾	235
124	109	108	106½	105½	104	103	204	179½	177½	175½	173½	171¼	169¼	284	250	247	244	241½	238½	235¾
125	110	108¾	107½	106¼	105	103¾	205	180½	178¼	176¼	174¼	172¼	170¼	285	250¾	248	245	242¼	239¼	236¼
126	111	109½	108	107	106	104½	206	181¼	179¼	177¼	175	173	171	286	251½	249	246	243	240	237½
127	111¾	110½	109¼	108	106¾	105½	207	182¼	180	178	176	174	171½	287	252¼	249¼	246¾	244	241	238¼
128	112½	111½	110	109	107½	106	208	183	181	179	176¾	174¾	172¼	288	253½	250½	247½	245	242	239
129	113½	112¼	111	109¾	108¼	107	209	184	181¾	179¾	177¾	175½	173½	289	254¼	251½	248¼	245¼	242¼	239¼
130	114½	113	112	110½	109	108	210	184¾	182¾	180½	178½	176½	174¼	290	255	252½	249½	246½	243½	240¾
131	115¼	114	112¾	111¼	110	108¾	211	185¾	183½	181½	179¼	177¼	175¼	291	256	253¼	250¼	247¼	244½	241½
132	116	115	113½	112	111	109½	212	186½	184½	182¼	180¼	178	176	292	257	254	251	248 -	245½	242½
133	117	115¾	114¼	113	111¾	110¼	213	187½	185¼	183¼	181	179	176¾	293	257¼	255	252	249	246¼	243¼
134	118	116½	115½	114	112½	111	214	188¼	186¼	184	182	179¾	177½	294	258½	256	253	250	247	244
135	118¾	117½	116	114¾	113¼	112	215	189¼	187	185	182¼	180½	178½	295	259½	256¾	253¾	250¾	247¼	244¾
136	119½	118½	117	115½	114	113	216	190	188	185¾	183½	181½	179¼	296	260½	257½	254½	251½	248½	245½
137	120½	119¼	117¾	116½	115	113¾	217	191	188¾	186½	184½	182¼	180	297	261¼	258½	255½	252½	249½	246½
138	121½	120	118½	117½	116	114½	218	191¼	189¾	187½	185¼	183	181	298	262	259¼	256½	253½	250½	247½
139	122¼	121	119½	118¼	116¾	115¼	219	192¼	190½	188¼	186¼	184	181¾	299	263	260	257¼	254¼	251¼	248¼

TRYING THE ROAST

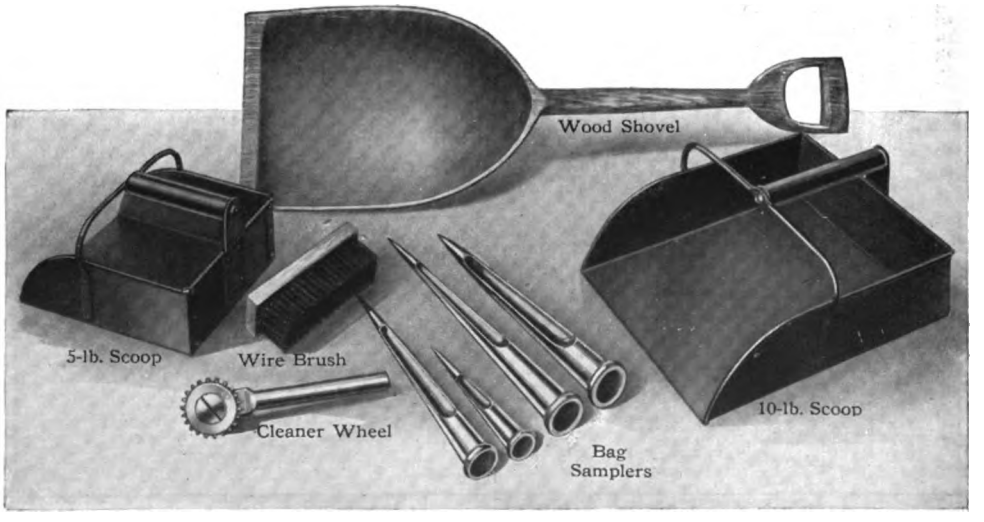
Cooling and Stoning

"Coffee which leaves the roaster beautifully uniform in appearance", says A. L. Burns, "may lose all uniformity by delayed or inadequate cooling. Separated beans of coffee will cool off by themselves; but when heaped together, the inner part of the mass will get hotter and even take fire. . . . Coffee must be spread over a considerable surface, or all kept moving, and have at the same time a lot of air forced through it. Otherwise, there will be some darkening and over-development of part of the coffee, and a loss of the uniformity which is the first requirement of good roasting."



MONITOR GAS ROASTER

The cooling apparatus consists of a movable, box-like metal car which can be brought up to the front of the roaster to the revolving cylinders. The car has a perforated false bottom, to which is attached a powerful exhaust-fan system that sucks the heat out of the coffee. In large plants,



A GROUP OF ROASTING-ROOM ACCESSORIES

DUMPING THE ROAST IN A COAL ROASTING PLANT

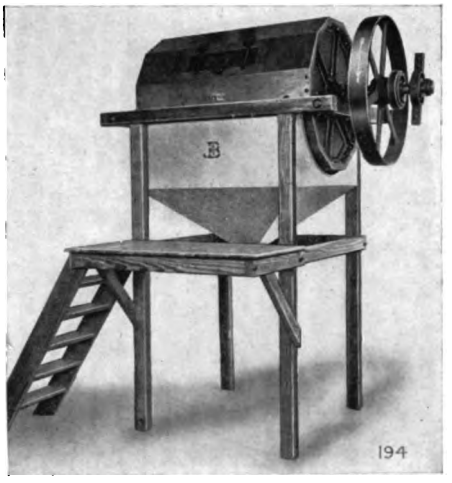
The roasted coffee is being turned into the cooling car, equipped with a swinging "flexarm" that keeps it always in connection with a suspended header pipe; the cooling being started as soon as the coffee leaves the roaster. The cooled coffee, by tipping the box, goes into a floor hopper

utilizing two or more floors, the tilting-type cooling car is favored. This car permits instant discharge through an opening in the floor into a receiving tank suspended from the ceiling below and connected with the stoning apparatus. Recently, a flexible-arm cooler has been invented that provides full fan suction to a cooler car at all points in its track travel from the roaster to the emptying position.

The stoner, an essential part of the modern roasting plant, has for its function the removal of stones and other foreign matter of which the green-coffee operations have failed to get rid. The stoner is usually built in direct combination with the cooling equipment, and does its work by means of a gravity separation in an upward-moving column of air. The coffee passes into the suction boot of the stoner, either directly from the cooler box or from a floor hopper into which the cooler dumps, and is carried up the stoner pipe, or "riser", by an air current of ample power which can be accurately regulated. This insures the carrying up of coffee only, the stones remaining at the bottom of the machine and being dumped at intervals into a pan underneath. The coffee, passing up the riser pipe, is delivered into a large "stoner hopper" which is usually hung to the ceiling of the roasting room. The correct construction of this hopper is of great importance, as the coffee must be deposited completely without breakage, and the air must pass on through the suction fan carrying nothing except bits of loose chaff.

A different type of cooler is in the form of an upright cylinder, consisting of two metal perforated drums, one set within the other. The inner drum is sufficiently small to allow the coffee to move freely between the drums. Inside the smaller one is an exhaust pipe which draws the heat and chaff out of the coffee. This device is recommended for use only in connection with wet roasted coffee.

Still another type consists of a single perforated cylinder set horizontal with the floor, and revolving alongside of an exhaust box which sucks out the heat and chaff as the coffee is tumbled about in the cylinder. A rocking type, that is not generally employed, is constructed on the principle of the screen used by housebuilders to separate coarse sand from the fine, and is



A Four-Bag Coffee Finisher

pivoted at the middle so that it can be rocked end to end.

Finishing or Glazing

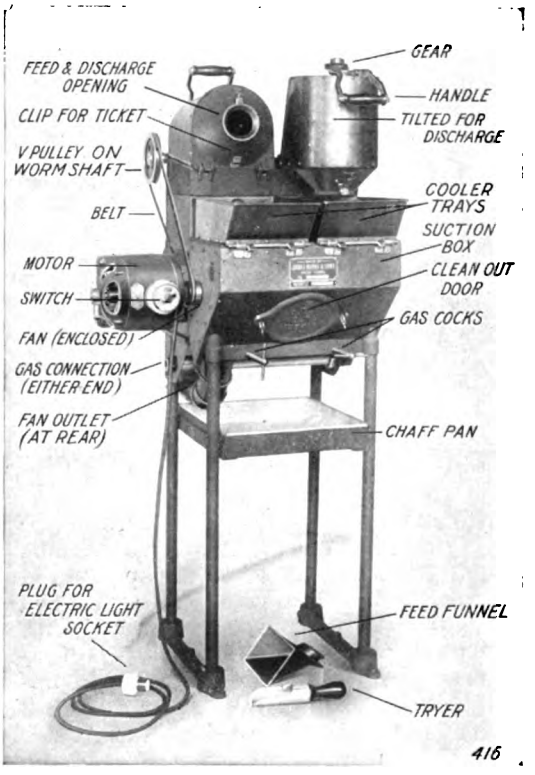
Finishing whole-bean roasted coffee, by giving it a friction polish while it is still moist, using a glaze solution or water only, is a practise not harmful if the proper solutions are employed. Roasted coffee dulls in ordinary handling, and it is claimed that coating not only improves its appearance, but serves also to preserve the natural flavor and aroma of the bean. A machine having flat-sided wooden cylinders with ventilated heads, and operated two-thirds full of coffee so as to get an effective rolling motion, is generally employed. Coatings composed of sugar and eggs are popular, but their use should be stated on the label.

Coffee roasters are divided on this question of coffee-coating. The best thought of the trade is undoubtedly opposed to the practise when it is done to conceal inferiority or abnormally to reduce shrinkage. Some New York coffee roasters, who made a thorough investigation of the matter, found coating coffee with a wholesome material not injurious and the coated coffee better in the cup. Dr. Harvey W. Wiley found, in the celebrated Ohio case against Arbuckle Brothers, that coating coffee with sugar and eggs produced beneficial results, and that the coating preserved the bean. The Bureau of Chemistry has never issued any ruling on the subject of coating coffee.

Blending Roasted Coffee

After cooling and stoning, unless it is to be polished or glazed, the coffee is ready for grinding and packing if it has been blended in the green state. Otherwise, the next step will be to mix the different varieties before grinding, although some packers blend the different kinds after they have been ground. To mix whole-bean roasted coffee without hurting its appearance is rather difficult, and there is no regular machine for such work.

Rarely is a single kind of coffee drunk straight. The common practise in all coun-



Burns Sample-Coffee Roaster

tries is to mix different varieties having opposing characteristics so as to obtain a smoother beverage. This is called blending, a process that has attained the standing of an art in the United States. Most package coffees are blends. In addition to other qualities, the practical coffee blender must have a natural aptitude for the work. He must also have long experience before he becomes proficient, and must be acquainted with the different properties of all the coffees grown, or at least of those that come to his market. Furthermore, he must know the variations in characteristics of current crops; for in most coffees no two crops are equal in trade values. Innumerable blends

are possible with more than a hundred different coffees to draw upon.

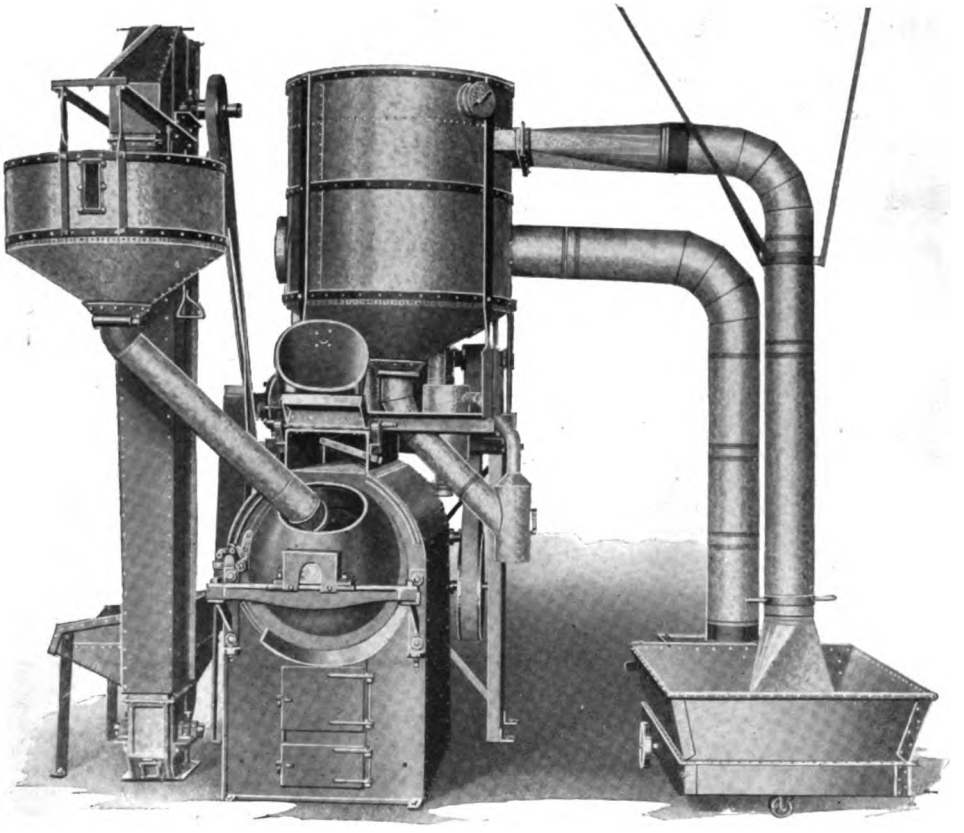
A blend may consist of two or more kinds of coffee, but the general practise is to employ several kinds; so that, if at any time one can not be obtained, its absence from the blend will not be so noticeable as would be the case if only two or three kinds were used.

In blending coffees, consideration is given first to the shades of flavor in the cup and next to price. The blender describes flavors as, acidy, bitter, smooth, neutral, flat, wild, grassy, groundy, sour, fermented, and hidey; and he mixes the coffees accordingly to obtain the desired taste in the cup. Naturally the wild, sour, groundy, fermented, and hidey kinds are avoided as much as possible. Coffees with a Rio flavor are used only in the cheaper blends.

Generally speaking, a properly balanced blend should have a full rich body as a basis; and to this should be added a growth to give it some acid character, and one to give it increased aroma.

Personal preference is the determining factor in making up a blend. Some blenders prefer a coffee with plenty of acid taste; while others choose the non-acid cup. For the first-named kind, the blender will mix together the coffees that have an acidy characteristic; while for a non-acidy blend, he will mix an acidy growth with one having a neutral flavor.

Coffees can be divided into four great classes, the neutral-flavored, the sweet, the acidy, and the bitter. All East Indian coffees, except Ceylons, Malabars, and the other Hindoostan growths, are classified as bitter, as are old brown Bucaramangas, brown Bogotas, and brown Santos. The acid coffees are generally the new-crop washed varieties of the western hemisphere, such as Mexicans, Costa Ricas, Bogotas, Caracas, Guatemalas, Santos, etc. However, the acidity may be toned down by age



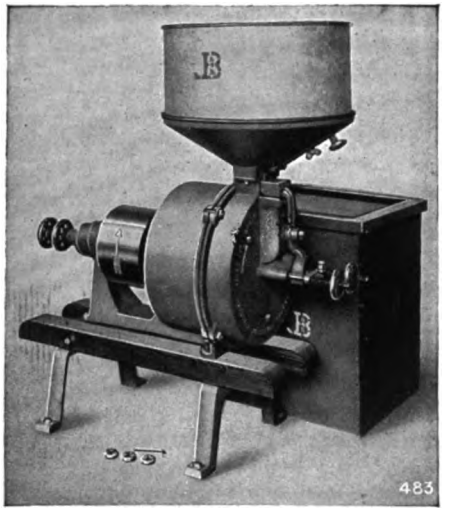
LAMBERT ECONOMIC COFFEE-ROASTING OUTFIT FOR COAL FIRE

This is a self-contained plant for one or two bags, and comprises a roaster, rotary cooler, elevator feed hopper, electric motor, and stoning and chaffing attachments. It may be equipped for gas

so that they become sweet or sweet-bitter. Red Santos is generally a sweet coffee, and is prized by blenders. High-grade washed Santo Domingo and Haiti coffees are sweet both when new crop and when aged.

Practical coffee blenders do not mix two new-crop acid coffees, or two old-crop bitter kinds, unless their bitterness or acidity is counteracted by coffees with opposite flavors. One blender insists that every blend should contain three coffees.

Some Bourbon and flat-beaned Santos coffees are better when new, and some are



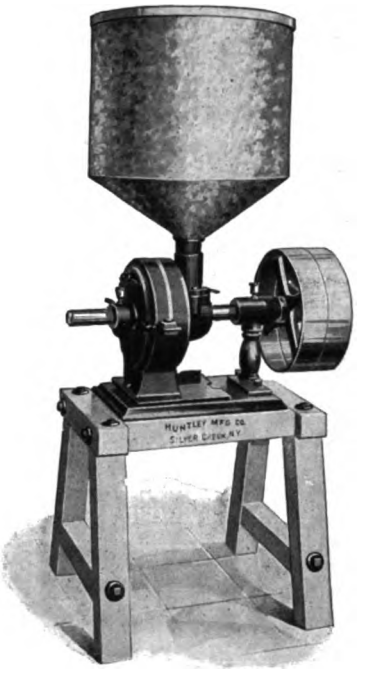
CHALLENGE PULVERIZER

better when old; but a blend of fine old-crop coffee with a snappy new-crop coffee gives a better result than either separately. A new-crop Bourbon and an old yellow flat bean make a better blend than a new-crop flat bean and an old-crop Bourbon. Probably the very best result in a low-priced blend may be obtained by using one-half old-crop Bourbon Santos with one-half new-crop Haiti or Santo Domingo of the cheaper grades.

Typical low-priced coffee blends in the United States may be made up of a good Santos, possibly a Bourbon, and some low-cost Mexican, Central American, Colombian, or Venezuelan coffee, the Santos counteracting these acidy Milds.

Going next higher in the scale of price, fancy old Bourbon Santos is used with one-third fancy old Cucuta or a good Trujillo.

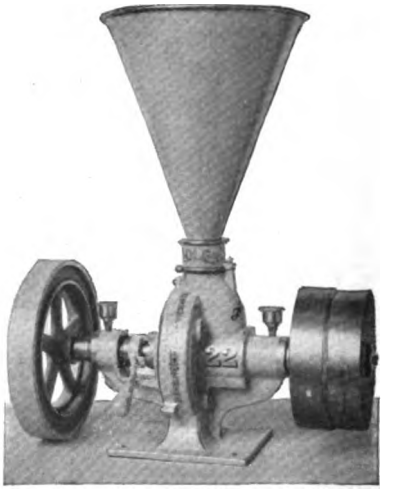
For a blend costing about five cents more a pound retail, one-third fancy old Cucuta or Merida is blended with fancy old Bourbon Santos.



MONITOR COFFEE-GRANULATING MACHINE

The highest-priced blend may contain two-thirds of a fine private estate Sumatra and one-third Mocha or Longberry Harari.

Alfred W. McCann, while advertising manager for Francis H. Leggett & Co., New York, in 1910, evolved a new coffee distinction based on the argument that certain coffees like Mochas, Mexicans, Bourbons, and Costa Ricas were developed in the cup



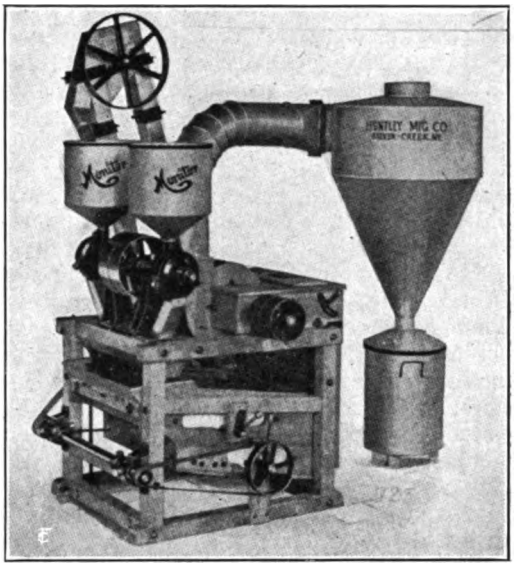
COLES NO. 22 GRINDING MILL

through the action on them of cream or milk; while others, such as Bogotas, Javas, Maracaibos, etc., flattened out when cream or milk was added. He argued, accordingly, that breakfast coffees should be made up from the former, but that the latter should not be used except for after-dinner coffees, to be drunk black.[4] William B. Harris, then coffee expert for the United States Department of Agriculture, took issue with Mr. McCann, claiming that if a coffee is watery and lacks body, it will not take kindly to milk or cream, not because the chemical action of milk or cream flattens it out, but because there is nothing there in the first place. The strength of the brew being equal, all coffees will take cream or milk, Mr. Harris held.[5]

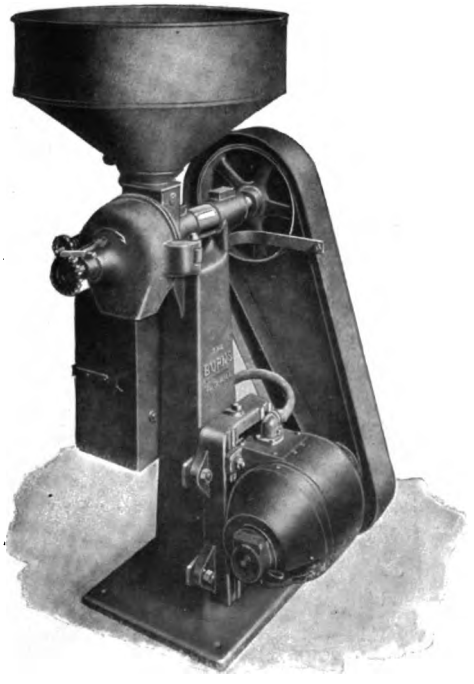
M. J. McGarty said in 1915 that he had tried out many coffees in the cup, and could not see that adding milk made any difference. However, he found that sometimes a line of coffees will contain a sample that flattens out at the drinking point (the point where the boiling water has cooled to permit of its being drunk); and he thought this was what Mr. McCann had in mind, as, by adding milk to such a coffee, it was brought back to the drinking point. In other words, it was Mr. McGarty's opinion that, in blending coffees, those coffees which hold their own from the start, or boiling point, until they become cold, or even improve right through, are more desirable for blending purposes; and that those that are best at the drinking point should be given the preference.[6]

[4] *Tea and Coffee Trade Jour.*, 1910 (vol. xviii: no. 2: p. 161; and no. 4: p. 319).

[5] *Tea and Coffee Trade Jour.*, 1910 (vol. xviii: no. 3: p. 242).



MONITOR STEEL-CUT GRINDER, SEPARATOR, AND CHAFFER



BURNS NO. 12 GRINDING MILL
Designed for hotel and restaurant trade

Coffee Blends for Restaurants

William B. Harris[7] believes that the coffee of prime importance in preparing restaurant blends is Bogota. He advises the use of a full-bodied Bogota and an acid Bourbon Santos in the proportion of three-fourths Bogota to one-fourth Santos. Blends may also be made up from combinations of Bogota, Mexicans, and Guatemalas.

According to Mr. Harris, the average blend of good coffee when made up, two and one-half pounds of coffee to five gallons of water, will produce a liquor of good color and strength. For many hotels, however, this may not answer, as it is not heavy enough. More coffee must then be used, or ten percent of chicory added. A blend with chicory can be made by using two-thirds Bogota, one-third Bourbon Santos,

[6] *Tea and Coffee Trade Jour.*, 1915 (vol. xxviii: pp. 415-416).

[7] "Making Coffee for the Consumer", *Tea and Coffee Trade Jour.*, 1914 (vol. xxvi: pp. 335-338).

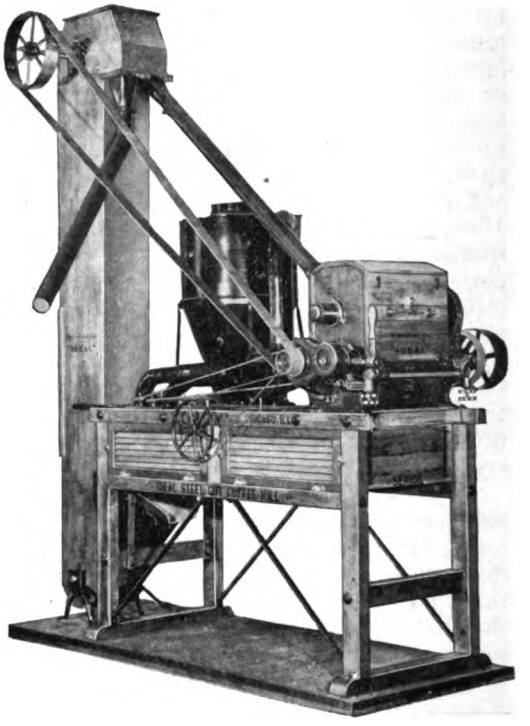
and ten percent chicory. No steward, hotel man, or restaurant man should, however, advertise "coffee" on his menu, and then serve a drink employing chicory; because, while there is no federal law against such a practise, there are state laws against it. Chicory is all right in its place; and many prefer a drink made from coffee and chicory; but such a drink can not properly be called coffee.

Hotel men should purchase their coffee in the bean, and do their own grinding. Then they need never have cause to complain that their coffee man deceived them, or that some salesman misled them. The hotel steward wishing to furnish his patrons with a heavy-bodied coffee, particularly a black after-dinner coffee, *without chicory,* will use three, four, or even four and one-half pounds of ground coffee to five gallons of water.

With so wide a choice of coffees to choose from, a coffee blender can make up many combinations to meet the demands of his trade. Probably no two blenders use exactly the same varieties in exactly the same proportions to make up a blend to sell at the same price. However, they all follow the same general principles laid down in the foregoing flavor classification of the world's coffees.

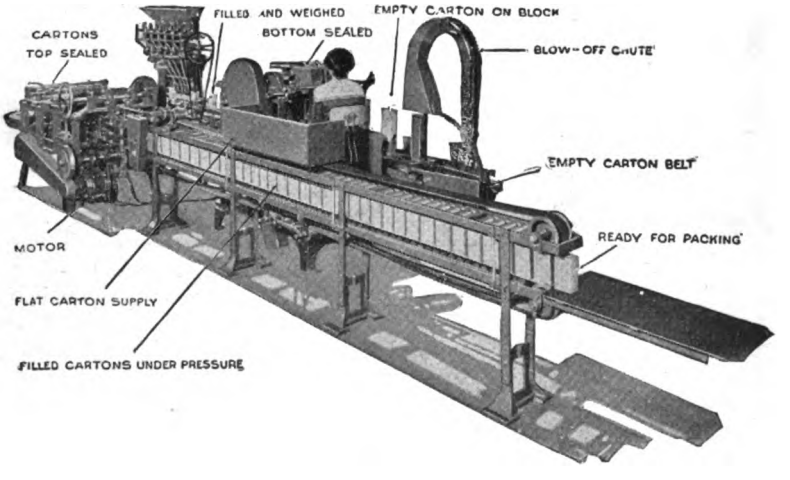
Grinding and Packaging Coffee

Unless the coffee is to be sold in the bean, it is sent to the grinding and packing department, to be further prepared for the consumer. Since the federal food law has been in effect, the public has gained confidence in ground and bean coffee in packages; and today a large part of the coffee consumed in the United States is sold in one and two pound cartons and cans, already blended and ready for brewing.



THE IDEAL STEEL-CUT MILL

A progressive coffee-packing house may have three different styles of grinding machines; one called the granulator for turn-



JOHNSON CARTON-FILLING, WEIGHING, AND SEALING MACHINE

ing out the so-called "steel-cut" coffee; the second, a pulverizer for making a really fine grind; and the third, a grinding mill for general factory work and producing a medium-ground coffee.

Commercial coffee-grinding machines are alike in principle in all countries, the beans being crushed or broken between toothed or corrugated metal or stone members, one revolving and the other being stationary. While all grinding machines are alike in principle, they may vary in capacity and design. The average granulator will turn out about five hundred pounds of "steel-cut" coffee in an hour; the pulverizer, from seventy-five to two hundred pounds; and the average grinding mill from five hundred to six hundred pounds. Some types of grinding machines have chaff-removing attachments to remove, by air suction, the chaff from the coffee as it is being ground.

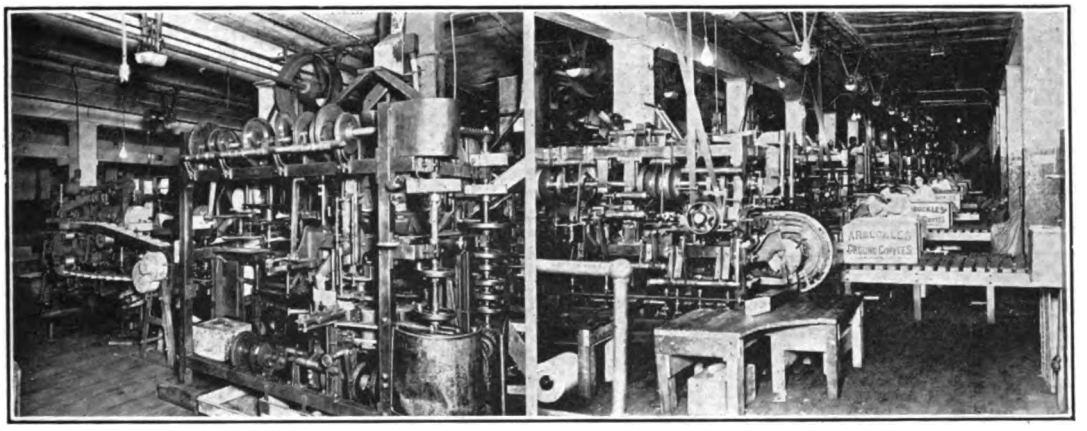
A large number of trade terms for designating different grinds of coffee are used in the United States, some of them meaning the same thing, while similar names are sometimes contradictory. A canvass of the leading American coffee packers in 1917[1] discovered that there were fifteen terms in use, and that there were thirty-four different meanings attached to them. For the term "fine" there were five different definitions; "medium" had five; "coarse", seven; "pulverized", four; "steel-cut", seven; "ground", two; "powdered", one; "percolator", two; "steel-cut-chaff-removed", one; "Turkish ground", one; while "granulated", "Greek ground", "extra fine", "standard", and "regular" were not defined.

The term "steel-cut" is generally understood to mean that in the grinding process the chaff has been removed and an approximate uniformity of granules has been obtained by sifting. The term does not necessarily mean that the grinding mills have steel burrs. In fact, most firms employ burrs made of cast-iron or of a composition metal known as "burr metal", because of its combined hardness and toughness.

The "steel-cut" idea is another of those sophistries for which American advertising methods have been largely responsible in the development of the package-coffee business in the United States. The term "steel-cut" lost all its value as an advertising catchword for the original user when every other dealer began to use it, no matter how the ground coffee was produced. When the public has been taught that coffee should be "steel-cut", it is hard to sell it ground coffee unless it is called "steel-cut"; although a truer education of the consumer would have caused him to insist on buying whole bean coffee to be ground at home.

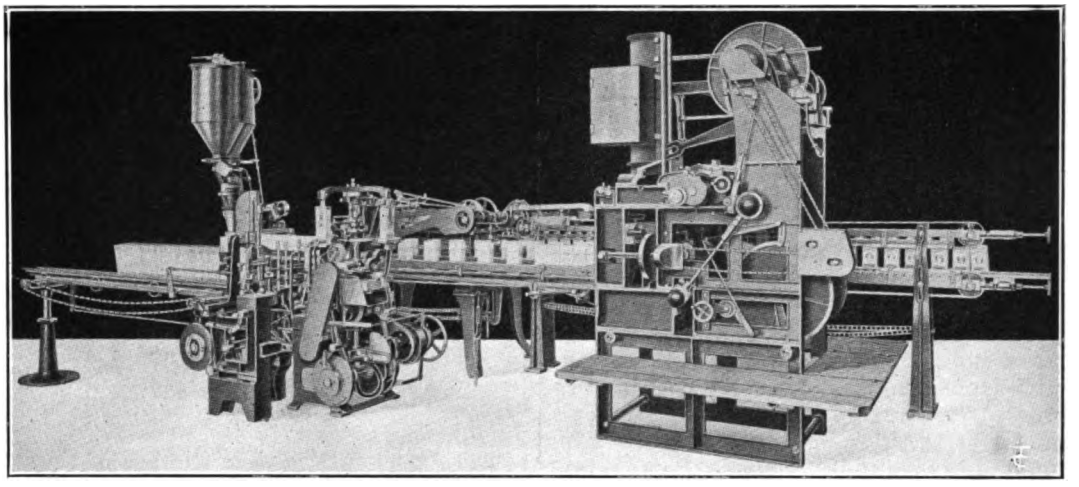
"Steel-cut" coffee, that is, a medium-ground coffee with the chaff blown out, does not compare in cup test with coffee that has been more scientifically ground and not

[1] "Coffee-Making Questionnaire", *Tea and Coffee Trade Jour.*, 1917 (vol. xxx: no. 1: pp. 31 - 34).



SMYSER PACKAGE-MAKING-AND-FILLING MACHINE AT THE ARBUCKLE PLANT, NEW YORK

This machine was invented by Henry E. Smyser of Philadelphia, who secured the first patent in 1880, but it has been much improved by the Arbuckle engineers. The half shown on the left makes the one-pound paper bags complete, including the separate lining of parchment, fills the bag, automatically inserts a premium list at the same time, packs it down, seals it, and delivers it on a short conveyor to the other half (shown on the right) where the package is wrapped in the outside glassine paper and pushed out on a table for the girls to put into shipping cases



MACHINE FOR AUTOMATICALLY PACKING COFFEE IN CARTONS

Five distinct operations are performed by the units comprising this Pneumatic installation, viz., carton-feeding, bottom-sealing, lining, weighing and top-sealing

given the chaff removal treatment that is largely associated in the public mind with the idea of the steel-cut process.

According to the results of the trade canvass previously referred to, it would appear that the terms most suited to convey the right idea of the different grades of grinding, and likely to be acceptable to the greatest number, would be "coarse" (for boiling, and including all the coarser grades); "medium" (for coffee made in the ordinary pot, including the so-called "steel-cut"); "fine" (like granulated sugar, and used for percolators); "very fine" (like cornmeal, and used for drip or filtration methods); "powdered" (like flour, and used for Turkish coffee).

Coffee begins to lose its strength immediately after roasting, the rate of loss increasing rapidly after grinding. In a test carried out by a Michigan coffee packer,* it was discovered that a mixture of a very fine with a coarse grind gives the best results in the cup. It was also determined that coarse ground coffee loses its strength more rapidly than the medium ground; while the latter deteriorates more quickly than a fine ground; and so on, down the scale. His conclusions were that the most satisfactory grind for putting into packages that are likely to stand for some time before being consumed is a mixture consisting of about ninety percent finely ground coffee and ten percent coarse. His theory is that the fine grind supplies sufficiently high body extraction; the coarse, the needful flavor and aroma. On this irregular grind a United States patent (No. 14,520) has been granted, in which the inventor claims that the ninety percent of fine eliminates the interstices — that allow too free ventilation in a coarse ground coffee — and consequently prevents the loss of the highly volatile constituents of the ten percent of coarse-ground particles, and at the same time gives a full-body extraction.

*King, John E., *Tea and Coffee Trade Jour.*, 1917 (vol. xxxiii: no. 6: pp. 552 - 555).

Making and Filling Containers

As stated before, a large proportion of the coffee sold in the United States is put up into packages, ready for brewing. Such containers are grouped under the name of the material of which they are made; such as tin, fiber, cardboard, paper, wood, and combinations of these materials, such as a fiber can with tin top and bottom. Generally, coffee containers are lined with chemically treated paper or foil to keep in the aroma and flavor, and to keep out moisture and contaminating odors.

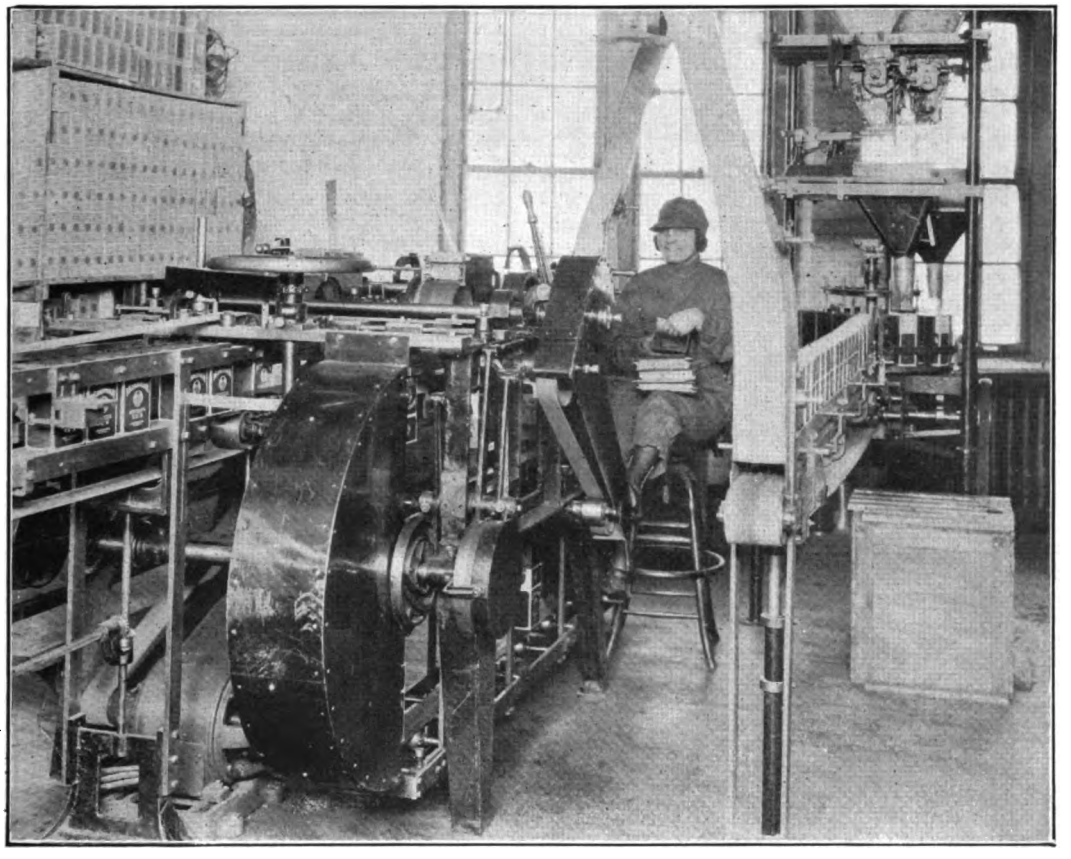
As the package business grew in the United States, the machinery manufacturers kept pace; until now there are machines that, in one continuous operation, open up a "flat" paper carton, seal the bottom fold, line the carton with a protecting paper, weigh the coffee as it comes down from an overhead hopper into the carton, fold the top and seal it, and then wrap the whole package in a waxed or

paraffined paper, delivering the package ready for shipment without having been touched by a human hand from the first operation to the last. Such a machine can put out fifteen to eighteen thousand packages a day.

Another type of machine automatically manufactures two and three-ply paper cans such as are used widely for cereal packages. It winds the ribbons of heavy paper in a spiral shape, automatically gluing the papers together to make a can that will not permit its contents to leak out. The machine turns out its product in long cylinders, like mailing tubes, which are cut into the desired lengths to make the cans. The paper or tin tops and bottoms are stamped out on a punch press.

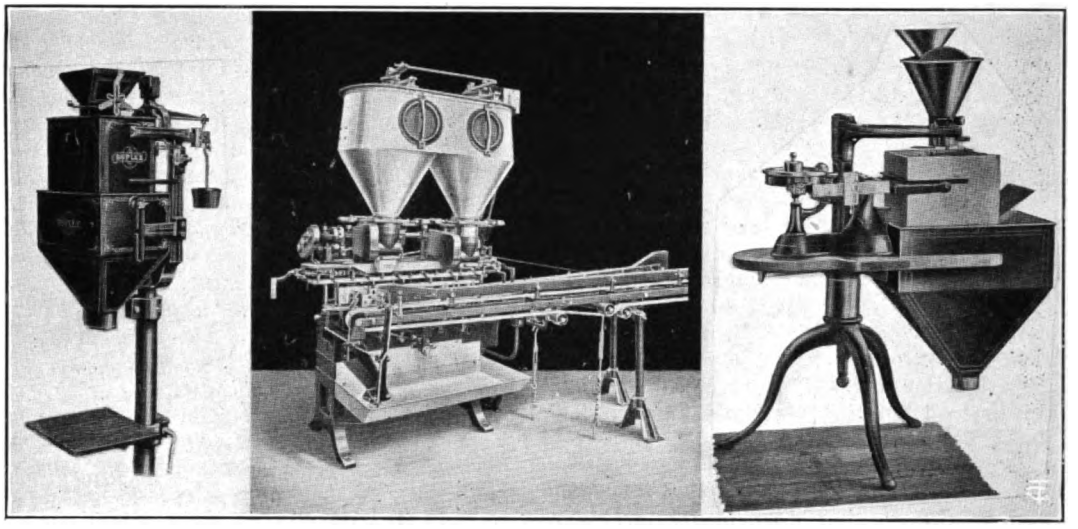
Coffee cans are generally filled by hand; that is, the can is placed under the spout of an automatic filling and weighing machine by an operator who slips on the cover when the can is properly filled. The weighing machine has a hopper which lets the coffee down into a device that gauges the correct amount, say a pound or two pounds, and then pours it into the can. The machine weighs the can and its contents, and if they do not show the exact predetermined weight, the device automatically operates to supply the necessary quantity. After weighing, the can is carried on a traveling belt to the labeling machine, where the label is automatically applied and glued. Then the can is put through a drying compartment to make the label stick quickly.

Paper bags are filled much the same way as the tin and the fiber cans. In fact, some packers fill their paper and fiber cartons by the same system; although the tendency among the largest companies is to instal the complete automatic packaging equipment, because of its speed and economy in packaging. Frequently, the weighing machines



COMPLETE COFFEE-CARTONING OUTFIT IN OPERATION

The girl is feeding the "flats" into an Improved Johnson bottom-sealer. The carton travels to a Scott weigher on the right and thence to the top-sealer on the left



THREE TYPES OF AUTOMATIC COFFEE-WEIGHING MACHINES

Left — Duplex net weigher. Center — Pneumatic cross-weight machine. Right — Scott net weigher

are used in filling wooden and fiber drums holding twenty-five, fifty, and one hundred pounds of coffee, to be sold in bulk to the retailer.

Coffee Additions and Fillers

In all large coffee-consuming countries, coffee additions and fillers have always been used. Large numbers of French, Italian, Dutch, and German consumers insist on having chicory with their coffee, just as do many Southerners in the United States.

The chief commercial reason for using coffee additions and fillers is to keep down the cost of blends. For this purpose, chicory and many kinds of cooked cereals are most generally used; while frequently roasted and ground peas, beans, and other vegetables that will not impair the flavor or aroma of the brew, are employed in foreign countries. Before Parliament passed the Adulterant Act, some British coffee men used as fillers cacao husks, acorns, figs, and lupins, in addition to chicory and the other favorite fillers.

Up to the year 1907, when the United States Food and Drugs Act became effective, chicory and cereal additions were widely used by coffee packers and retailers in this country. With the enforcement of the law requiring the label of a package to state when a filler is employed, the use of additions gradually fell off in most sections.

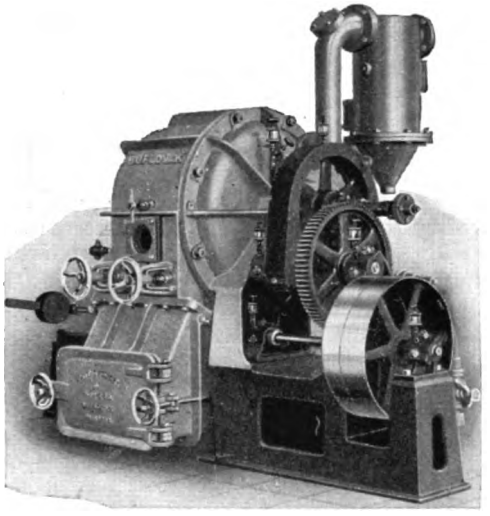
In botanical description and chemical composition chicory, the most favored addition, has no relationship with coffee. When roasted and ground, it resembles coffee in appearance; but it has an entirely different flavor. However, many coffee-drinkers prefer their beverage when this alien flavor has been added to it.

Treated Coffees and Dry Extracts

The manufacture of prepared, or refined, coffees has become an important branch of the business in the United States and Europe. Prepared coffees can be divided into two general groups: treated coffees, from which the caffein has been removed to some degree; and dry coffee extracts (soluble coffee), which are readily dissolved in a cup of hot or cold water.

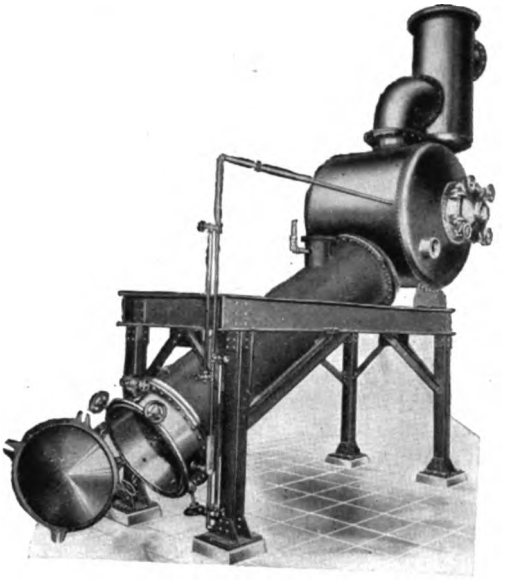
To decaffeinate coffee, the most common practise is to make the green beans soft by steaming under pressure, and then to apply benzol or chloroform or alcohol to the softened coffee to dissolve and to extract the caffein. Afterward, the extracting solvents are driven out of the coffee by re-steaming. However, chemists have not yet been able to expel all the caffein in treating coffee commercially, the best efforts resulting in from 0.3 to 0.07 percent remaining. After treatment, the coffee beans are then roasted, packed, and sold like ordinary coffee.

In manufacturing dry coffee extract in the form of a powder that is readily soluble in water, the general method is to extract



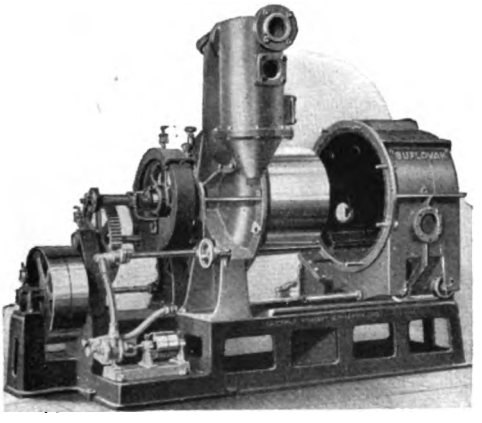
VACUUM DRUM DRIER

Vacuum drum drier, No. 1 size; diameter of drum, 12 inches; length, 20 inches; used for converting coffee extract and other liquids into dry powder form. This is the smallest size, and was developed for drying smaller quantities of liquids than could be handled economically in the larger sizes. To provide accessibility of the interior for cleansing, the outer casing may be moved back on the track of the bedplate (as shown in the cut), so that free access may be had to the drum and interior of the casing.



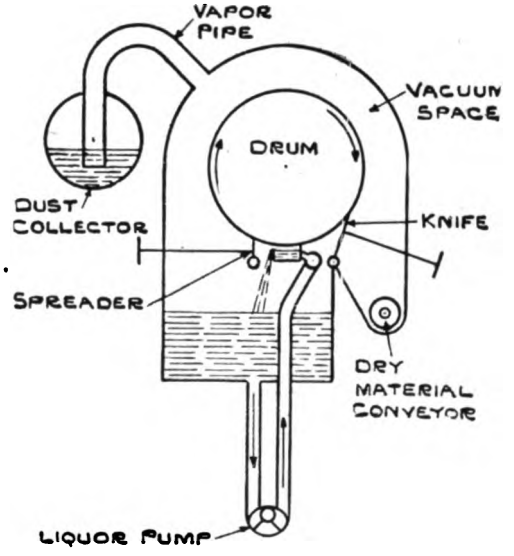
RAPID-CIRCULATION EVAPORATOR

Used to concentrate coffee extracts and other liquids. The tubes are easily reached through the open door for cleansing. Interior of the vapor body is reached through a manhole.



REAR VIEW OF DRUM DRIER

Vacuum drum dryer, No. 1 size; rear view, showing outer casing rolled back from the drum.



CROSS-SECTION OF VACUUM DRIER

This shows the interior arrangement and principle of operation. The drawing represents a larger size than the photograph, and while the arrangement of some parts is slightly different, the principle of operation is the same.

UNITS USED IN THE MANUFACTURE OF SOLUBLE COFFEE

the drinking properties from ground roasted coffee by means of water, and to evaporate the resulting liquid until only the coffee powder is left. Several methods have been developed and patented to prevent the valuable flavor elements from being evaporated with the water.

A typical dry - coffee - extract - making equipment consists of a battery of percolators, or "leachers", a vacuum evaporating device, and a vacuum drier. The leachers do not differ materially from the ordinary restaurant percolators, a battery usually including from three to seven units, each charge of water going through all the percolations. The resulting heavy liquid then goes to the evaporator to be concentrated into a thick liquor. The evaporator consists of a horizontal cylindrical vapor compartment connected with an inclined cylindrical steam chest in which are numerous tubes, or flues, that occupy almost the whole chest. These tubes are heated by steam. The coffee liquor is passed through the tubes at high speed and thrown with great force against a baffle plate at the opening to the vapor chest. The vapor passes around the baffle plate to a separator. The liquor drops to the lower part of the steam-chest (which is free from tubes), and is ready to be drawn out for the next process, the drying.

At this stage, the extract is a heavily concentrated syrup and is ready to be converted into powder. This is done in the vacuum drier, which consists of a hollow revolving drum surrounded by a tightly sealed cast-iron casing. The drum is heated by steam injected into its interior, and is revolved in a high vacuum. In operation, a coating of coffee liquor is applied automatically, by means of a special device, to the outside of the drum. The liquor is taken by gravity from the reservoir containing the liquid supply and is forced upward by means of a pump into the liquid supply pan, directly under the drum, with sufficient pressure to cause the liquid to adhere to the drum, the excess liquor overflowing from the pan into the reservoir. The coating on the drum is controlled or regulated by a spreader. The heat and the vacuum reduce the extract to a dry powder in less than one revolution of the drum. As the drum completes three-quarters of a turn, a scraper knife removes the coffee powder, which is delivered to a receiver below the drum. Modern vacuum-drum driers have a capacity of from twenty-five to five hundred pounds of dry soluble coffee per hour.

C. W. Trigg and W. A. Hamor were granted a patent in the United States in 1919 on a new process for making an aromatized coffee extract. In this process, the caffeol of the coffee is volatilized and is then brought into contact with an absorbing medium such as is used in the extraction of perfumes. The absorbing medium is then treated with a solvent of the caffeol, and the solution is separated from the petrolatum. Then the coffee solution is concentrated to an extract by evaporation; after which, the extract and the caffeol are combined into a soluble coffee. Five additional patents were granted on this same process in 1921.

Chapter XXVI

WHOLESALE MERCHANDISING OF COFFEE

How coffees are sold at wholesale — The wholesale salesman's place in merchandising — Some coffee costs analyzed — Handy coffee-selling chart — Terms and credits — About package coffees — Various types of coffee containers — Coffee package labels — Coffee package economies — Practical grocer helps — Coffee sampling — Premium method of sales promotion

COFFEE is sold at wholesale in the United States chiefly by about 4,000 wholesale grocers, who handle also many other items of food; and by roasters, who make a specialty of preparing the green coffee for consumption, and who feature either bulk or trade-marked package goods.

Much the largest proportion of the wholesale coffee trade today is made up of roasted coffees, though some wholesalers still sell the green bean to retail distributers who do their own roasting. Most of the roasted coffee sold is ground; although in some parts of the United States there is at present a growing consumer demand for coffee in the bean. Of the coffee sold in trade-marked packages in 1919 in the United States, about seventy-five percent was ground ready for brewing.

The larger wholesale houses generally confine their operations to the section of the country in which they are located, but some of the biggest coffee-packing firms seek national distribution. In both cases, branch houses are usually established at strategic points to facilitate the serving of retail customers with freshly roasted coffee at all times.

In recent years, too, it has become a general practise for the home offices, or main headquarters, to advertise their product in magazines, newspapers, street cars, and by mail and on billboards; while the branches solicit trade in their territories by means of traveling salesmen, local newspaper advertisements, booklets, circulars, and demonstrations at food shows.

The Wholesale Salesman

The traveling salesman is probably the most effective agency in securing the retailer's orders for coffee. A good coffee salesman not only sells coffee, but he teaches his customer how he can best build up and hold his coffee trade. He acquaints the retailer with all the talking points about the coffee he handles, how to feature it in store displays and advertisements, how to stage demonstrations and to work up special sales.

If he is a *good* salesman, he does not permit the merchant to buy more coffee than he can dispose of while it is still fresh. And he shows the dealer the folly of handling too many brands of package coffees. If he sells coffee in bulk, the efficient salesman has also a sound working knowledge of blending principles, and is able to suggest the kinds of coffee to blend to suit the particular requirements of each grocer's trade. In short, he takes an intelligent interest in his customer's business, and cooperates with him in building up a local coffee trade.

Some Coffee Costs Analyzed

In estimating the price at which he must sell his coffee to make a fair profit, the wholesale coffee merchant has many items

of expense to consider. To the cost of the green coffee he must add: the cost of transportation to his plant; the loss in shrinkage in roasting, which ranges from fifteen to twenty percent; packaging costs, if he is a packer; the items of expense in doing business, such as wages and salaries, advertising, buying and selling, freight, express, warehouse and cartage, postage and office supplies, telephone and telegraph, credit and collection; and the fixed overhead charges for interest, heat, light, power, insurance, taxes, repairs, equipment, depreciation, losses from bad debts, and miscellaneous items.[1] The average loss for bad debts among grocers in 1916 was 0.03 percent of the total sales, according to the director of business research, Harvard University, who estimated also that the common figure for credit and collection expense was 0.06 percent. The total cost of doing business has been estimated as ranging between twelve and twenty percent of the total annual sales, so that a bag of green coffee costing $16 in New York or New Orleans costs the coffee packer in the Middle West from $22.33 to $24.56, according to the expense of carrying on his business.

Terms and Credits

Wholesale coffee trade contract terms and credits are not dissimilar from those in other lines of commerce. The wholesaler helps the retailer finance his business to the extent of granting him thirty to sixty days in which to pay his bill, offering him a cash discount if the invoice is paid within ten days of date of sale. Until recent years, these terms were frequently abused, the customer demanding much longer credits and often taking a ten-day cash discount after thirty or more days had elapsed. This abuse was particularly prevalent from 1907 to 1913, when coffee prices were low and competition was especially keen.[2] In addition, the retailers often demanded special deliveries of supplies, which added to the wholesalers' costs; and some retailers refused to pay the cost of cartage from the cars to their stores.

With the coming of high prices after the close of the World War, the wholesalers showed a tendency to tighten up their credit and discount terms, the National Coffee Roasters Association especially recommending thirty days' credit, or at most sixty days, and a maximum cash discount rate of two percent.

Another trade abuse which has been corrected almost altogether was the practise of "selling coffee to be billed as shipped"; that is, the wholesaler held coffee on order, and billed only when delivered, even though several weeks or months had passed before shipment.

About Package Coffees

Since the beginning of the twentieth century, the sale of coffee in packages has increased steadily until now (1922) this form of distribution competes strongly with bulk coffee sales. While bulk coffee is still preferred in some eastern sections of the United States, coffee packers are making deep inroads there, to the extent that practically all high and medium grade retailers feature package coffees, either under their own brand name, or that of a coffee specialty house.

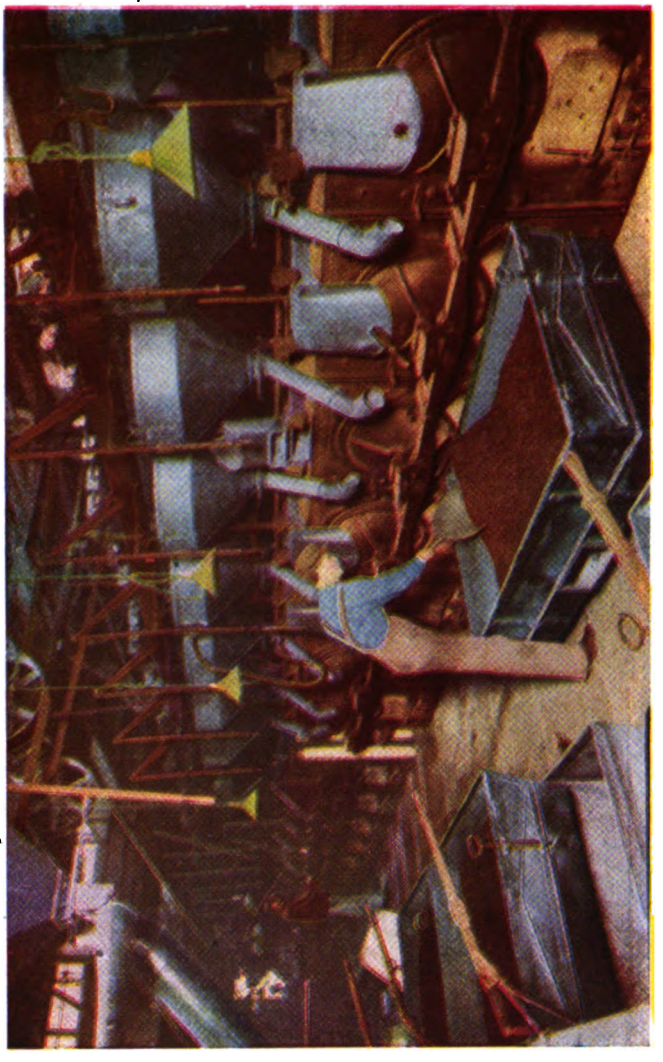
The prime requisite for success in any package coffee is the composition of the blend. One of the leaders in the field, which we will call Y, is said to be composed of Bogota, Bourbon Santos, and Mexican. In March, 1922, it was being sold at retail in New York for 42 cents. A competing brand, which we will call Z, is said to be a blend of Bogota and Bourbon Santos. It was being sold at retail in New York, at the same period for the same price. Simultaneously, in the retail stores of a well known chain system, a bulk blend composed of sixty percent Bourbon Santos and forty percent Bogota was to be had loose for 29 cents.

The second important factor that contributes to package coffee success is the container. It must be of such a character as will best preserve the freshness — the flavor and the aroma of the coffee — until it reaches the consumer.

Package coffee has not yet won universal favor. Some of the arguments used against it are: that the price is generally higher than the same grade in bulk; that it leads to price-cutting by stores that can afford to sell it at about cost as a leader for other articles; that the margin of profit is frequently too close for some retailers; that when the market advances, some packers change their blends to keep down cost and

[1] Ach, F. J., *Tea and Coffee Trade Jour.*, 1912, 1919 (vol. xxiii: no. 4: pp. 133-135; vol. xxxvi: no. 4: pp. 344-343).

[2] Gillies, E. J., *Tea and Coffee Trade Jour.*, 1913 (vol. xxv: pp. 574-576).



COAL ROASTING PLANT IN A NEW YORK FACTORY

THE ROASTED BEANS HAVE JUST BEEN DUMPED INTO THE COOLER BOX

COFFEE-SELLING CHART

BY A. J. DANNEMILLER

Showing Prices to Be Obtained to Realize Certain Percents *on Sales* of Roasted Coffee

Cost Roasted & Packed	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%	21%	22%	23%	24%	25%
4	4.44	4.50	4.55	4.61	4.67	4.72	4.77	4.82	4.88	4.94	5.00	5.07	5.13	5.20	5.26	5.33
4½	5.00	5.06	5.12	5.18	5.24	5.30	5.36	5.43	5.49	5.57	5.63	5.70	5.77	5.84	5.91	6.00
5	5.55	5.62	5.68	5.75	5.82	5.89	5.96	6.03	6.10	6.18	6.25	6.33	6.42	6.50	6.55	6.68
5½	6.11	6.18	6.25	6.33	6.41	6.49	6.57	6.65	6.72	6.80	6.88	6.97	7.06	7.15	7.24	7.33
6	6.67	6.74	6.81	6.89	6.97	7.06	7.15	7.24	7.33	7.42	7.50	7.60	7.70	7.80	7.90	8.00
6½	7.23	7.31	7.38	7.47	7.55	7.84	7.74	7.84	7.94	8.03	8.13	8.24	8.33	8.45	8.56	8.67
7	7.78	7.87	7.95	8.05	8.15	8.25	8.35	8.45	8.54	8.65	8.75	8.86	8.96	9.09	9.21	9.33
7½	8.34	8.43	8.52	8.62	8.72	8.83	8.93	9.04	9.15	9.26	9.30	9.50	9.63	9.75	9.87	10.00
8	8.89	8.99	9.09	9.20	9.31	9.42	9.53	9.65	9.76	9.88	10.00	10.13	10.26	10.39	10.53	10.67
8½	9.45	9.55	9.66	9.77	9.87	9.99	10.12	10.25	10.37	10.40	10.63	10.76	10.90	11.04	11.19	11.33
9	10.00	10.12	10.23	10.35	10.47	10.59	10.72	10.85	10.98	11.12	11.25	11.40	11.54	11.70	11.85	12.00
9½	10.56	10.68	10.80	10.92	11.04	11.17	11.31	11.45	11.59	11.73	11.88	12.03	12.18	12.34	12.51	12.67
10	11.11	11.24	11.37	11.49	11.63	11.77	11.90	12.05	12.20	12.34	12.50	12.66	12.82	12.98	13.16	13.33
10½	11.66	11.81	11.93	12.07	12.21	12.36	12.49	12.65	12.81	12.95	13.12	13.29	13.46	13.63	13.81	14.00
11	12.22	12.37	12.50	12.64	12.85	12.95	13.08	13.26	13.43	13.57	13.75	13.93	14.10	14.28	14.47	14.67
11½	12.77	12.93	13.07	13.21	13.37	13.54	13.68	13.86	14.03	14.19	14.38	14.56	14.74	14.93	15.13	15.33
12	13.33	13.49	13.64	13.79	13.95	14.12	14.28	14.46	14.65	14.81	15.00	15.19	15.38	15.58	15.79	16.00
12½	13.89	14.05	14.21	14.37	14.53	14.71	14.88	15.06	15.24	15.43	15.63	15.83	16.02	16.23	16.45	16.67
13	14.44	14.62	14.78	14.93	15.11	15.30	15.47	15.66	15.85	16.05	16.25	16.45	16.67	16.87	17.10	17.33
13½	15.00	15.18	15.33	15.51	15.69	15.88	16.07	16.27	16.46	16.67	16.88	17.08	17.31	17.53	17.76	18.00
14	15.55	15.73	15.90	16.08	16.28	16.48	16.67	16.84	17.07	17.28	17.50	17.72	17.95	18.17	18.40	18.67
14½	16.11	16.29	16.48	16.65	16.86	17.05	17.26	17.47	17.68	17.90	18.13	18.35	18.59	18.83	19.07	19.33
15	16.66	16.85	17.05	17.23	17.44	17.65	17.85	18.07	18.29	18.51	18.75	18.98	19.23	19.48	19.74	20.00
15½	17.23	17.43	17.61	17.80	18.03	18.22	18.45	18.67	18.90	19.13	19.38	19.61	19.87	20.12	20.39	20.67
16	17.78	17.98	18.18	18.38	18.60	18.83	19.05	19.28	19.51	19.75	20.00	20.25	20.51	20.77	21.05	21.33
16½	18.33	18.54	18.75	18.97	19.18	19.41	19.64	19.88	20.12	20.38	20.63	20.88	21.16	21.42	21.70	22.00
17	18.89	19.10	19.33	19.52	19.76	20.01	20.24	20.48	20.73	21.99	21.25	21.51	21.78	22.07	22.36	22.67
17½	19.44	19.66	19.89	20.10	20.35	20.59	20.83	21.08	21.34	21.60	22.88	22.15	22.43	22.72	23.03	23.33
18	20.00	20.22	20.45	20.67	20.93	21.18	21.43	21.69	21.95	22.22	22.50	22.78	23.05	23.37	23.68	24.00
18½	20.55	20.79	21.02	21.24	21.51	21.77	22.02	22.29	22.56	22.84	23.13	23.42	23.70	24.02	24.34	24.67
19	21.11	21.35	21.59	21.84	22.09	22.36	22.62	22.90	23.17	23.45	23.75	24.05	24.34	24.67	25.00	25.33
19½	21.66	21.91	22.16	22.41	22.68	22.95	23.21	23.50	23.78	24.07	24.38	24.68	24.99	25.32	25.66	26.00
20	22.22	22.47	22.73	22.99	23.25	23.54	23.81	24.11	24.39	24.68	25.00	25.31	25.64	25.97	26.32	26.67
20½	22.77	23.03	23.30	23.55	23.83	24.14	24.40	24.70	25.00	25.30	25.63	25.94	26.28	26.61	26.97	27.33
21	23.33	23.60	23.87	24.14	24.42	24.70	25.00	25.30	25.62	25.92	26.25	26.58	26.92	27.26	27.63	28.00
21½	23.88	24.16	24.43	24.71	25.00	25.29	25.59	25.90	26.22	26.54	26.88	27.22	27.56	27.91	28.28	28.67
22	24.44	24.72	25.00	25.28	25.58	25.92	26.19	26.51	26.83	27.16	27.50	27.86	28.10	28.56	28.94	29.33
22½	24.99	25.29	25.57	25.85	26.16	26.47	26.78	27.12	27.44	27.78	28.13	28.48	28.85	29.22	29.61	30.00
23	25.55	25.85	26.14	26.42	26.74	27.06	27.38	27.71	28.06	28.38	28.75	29.11	29.48	29.86	30.26	30.67
23½	26.11	26.41	26.70	27.00	27.32	27.66	27.97	28.32	28.66	29.00	29.38	29.76	30.12	30.51	30.92	31.33
24	26.67	26.97	27.26	27.58	27.90	28.24	28.57	28.92	29.27	29.62	30.00	30.38	30.77	31.17	31.58	32.00
24½	27.22	27.54	27.84	28.15	28.49	28.83	29.16	29.52	29.88	30.24	30.63	31.02	31.41	31.81	32.24	32.67
25	27.78	28.09	28.41	28.73	29.07	29.41	29.76	30.12	30.49	30.86	31.25	31.65	32.05	32.47	32.90	33.33

NOTE, FOR EXAMPLE: Coffee costing 13.50 per 100 pounds (see first column), to realize 17% *on sales*, must bring 16.27; which really represents 21% *on cost*

to maintain the advertised price; and that, when packed ground, there is a rapid loss of flavor, aroma, and strength.

Friends of package coffees point to the saving in time in handling in the store; to the fact that the contents of a package are not contaminated by odors or dirt; that the blends are prepared by experts and are always uniform; that the coffee is always properly roasted; and, in the case of package ground coffee, properly ground; that the brand names are widely and consistently advertised; and that the retailer has the benefit of the packer's co-operation in building up sales campaigns, by means of booklets and local advertising.

Various Types of Coffee Containers

Five types of containers are used for packing coffee, namely, cardboard cartons, paper bags, fiber or paper cans, tin cans, and composite (tin and fiber) cans and packages. Fiber packages include paraffin-lined as well as those that have been chemically treated with other water-proof and flavor-retaining substances.

The carton is popular, because it takes up less room in storage and in shipment to the packing plant, and also because the label can be printed directly on the package. Another economy feature is its adaptability to the automatic packaging machine, which transforms it from a flat sheet into a wrapped and sealed package of coffee. Moisture-proof and flavor-retaining inner liners and outside wrappers are generally used to prevent rapid deterioration of the coffee's strength and aroma.

Paper bags are the least expensive containers to be obtained; and when lined with foil or prepared paper, they are considered to be satisfactory. Like the carton, the label can be printed directly on the bag. They also lend themselves to close packing in shipping cases.

Another popular type of container is the paper, or fiber, can which is made of fiber board with a slip cover. Fiber cans are

also made with tin tops and bottoms, the metal parts supplying a measure of rigidity to the package. These composite packages are made round, square, oblong, or cylindrical.

Paraffined containers are characterized by an outer covering of glossy paraffin, and are made in various shapes. In some makes, the paraffin is forced into the pores of the paper base, making for added flavor-retaining and moisture-proof properties. In this type of package the label may also be printed direct on the package.

In recent years, vacuum packed coffee has won great favor, first in the West and latterly in the East. Tin cans are used. Vacuum sealing machines close the containers at the rate of forty to fifty a minute. Private tests by responsible coffee men are said to have shown that coffee in the bean or ground, when vacuum packed, retains its freshness for a longer period than when packed by any other method.

Labels

Coffee packers must give due attention to certain well defined laws bearing on package labels. Before the Federal Pure Food Act went into effect on January 1, 1907, many coffee labels bore the magic names of "Mocha" and "Java," when in fact neither of those two celebrated coffees were used in the blend. Even mixtures containing a large percentage of chicory, or other addition, were labeled "Pure Mocha and Java Coffee." The enactment of the pure food law ended this practise, making it compulsory that the label should state either the actual coffees used in the blend, or a brand name, together with the name of either the packer or the distributer. When chicory or other addition is used, the fact must be stated in clear type directly following the brand name. The reading matter on the label should contain facts only, and should not bear extravagant claims of superior quality or of methods of preparing or packing that have not been followed.

Coffee Packaging Economies

During the United States' participation in the World War, tin became practically unobtainable, and coffee packers turned to paper and fiber containers as substitutes in packaging nearly all grades. In this war period, commercial economy became a fetish in the business world; and coffee packers worked to save not only material, but shipping space, labor, and time. Paper and fiber containers proved to be not only practical but economical packages. Because of their war-time experience, many packers changed permanently to square and oblong containers. They found these containers could be packed "solid" in shipping cases, leaving no unfilled space between packages as is the case with cylindrical cans; also, smaller shipping cases could be used. As a further measure of economy, several packers changed from the square "knocked-down" paper or fiber carton to the oblong carton that is made up, filled, and sealed by automatic machinery from a flat, printed sheet of cardboard. This type of container is generally lined or wrapped with a moisture-proof and flavor-retaining paper.

There has been a tendency in recent years to standardize coffee packages as a means of working out packaging and shipping economies. One of the leading American proponents[3] of standardization said:

> One of the first arguments raised against standardization is that it eliminates individuality, and individuality is one of the big guns covering the front line trenches in the war of competition. The folly of recommending that every one-pound coffee carton, for instance, should be of exactly the same size and shape is immediately apparent; but let us not confuse such unification with standardization.
>
> Assuming that a pound of coffee may be safely contained in seventy-two cubic inches, we find that a carton three inches thick by four inches wide by six inches high will serve our purpose; and, as an illustration of extremes, a carton three inches thick by three inches wide by eight inches high, or one [carton] two inches thick by six inches wide by six inches high, will each have exactly the same cubical contents. In fact, there is an almost infinite variety of combinations of dimensions which will contain substantially seventy-two cubic inches.

As an example of how coffee packages can be standardized this authority cites the following sizes of flat-sheet containers and their respective dimensions and capacities:

Size	Thick and Wide Inches	High Inches	Contents Cubic Ins.
1 lb.	2⅝ by 4½	6¼	73.83
½ lb.	2¼ by 3⅛	5¼	36.91
¼ lb.	1⅞ by 2⅝	4½	18.46

The advantages claimed for these packages are that each is well proportioned and makes a good selling appearance; each bears a direct relation to the other two; and all may be handled with uniformly good

[3] Wellman, C. P., *Tea and Coffee Trade Jour.*, 1918 (vol. xxxiv: no. 6: p. 560).

VARIOUS TYPES OF COFFEE CONTAINERS

THIS GROUP OF LEADING TRADE-MARKED COFFEES ILLUSTRATES THE WIDE VARIANCE IN STYLES OF CONTAINERS USED BY COFFEE-ROASTERS. THE PACKAGES SHOWN ARE AS FOLLOWS:

1 — Double carton. 2, 3 — Cartons. 4 — Fiber sides, tin top and bottom, friction cover. 5 — Vacuum tin can. 6 — Fancy paper bag. 7 — Machine-wrapped paper package. 8 — Fancy paper bag. 9 — Carton with patented opening and closing device. 10 — Wrapped paper package. 11 — Tin can with slip cover. 12 — All-fiber can with slip cover. 13 — Tin can with slip cover. 14 — Lithographed tin can with friction cover. 15, 16 — Tin cans with slip covers. 17 — Squat tin can. 18 — Napa-can. 19, 20, 21 — Vacuum tin cans

results on the same set of standardized packaging machinery. One size of shipping case, instead of three, may be used to hold exactly the same number of pounds of coffee, regardless of whether shipped in one-pound, half-pound, or quarter-pound cartons. For smaller dealer assortments, any two, or all three sizes also exactly fit the following standard shipping cases:

For 36 lbs., 13⅞" by 16½" by 12¾" high
For 54 lbs., 13⅞" by 16½" by 19⅛" high

This standardization of packages and shipping containers results in a lower cost of containers and a smaller stock to carry, with attendant reductions in details in purchasing and billing departments, in inventories, and in many other overhead expense factors.

Practical Grocer Helps

Wholesale coffee merchandising does not properly end with the delivery of a shipment of coffee to a retailer. The progressive wholesaler knows that it is to his best interest to help that grocer sell his coffee as quickly as possible; to make a good profit on a quick turnover; and to dispose of it before the coffee has deteriorated.

Practical co-operation between wholesaler and retailer is one of the most important factors in coffee merchandising. In these days of keen and unremitting competition, neither agency can stand alone for long. The progressive wholesaler does not sell a retailer a poorer quality of coffee for any particular grade than his trade calls for, and he does not load him up with more than can be disposed of while still fresh. He gauges the capacity and facilities of each retail customer, and then gives him practical help to keep the stock moving.

The packer of branded coffees helps by advertising to the consumer in magazines and newspapers, always featuring the name of his brands; and he supplies the grocer with educational pamphlets and booklets on the growing, preparation, and merits of coffee in general, with an added fillip about the desirability of his particular brand. Through his salesmen the packer shows the grocer how to display the coffee on the counter and in the window, and often supplies him with placards and cut-outs featuring his brand. He co-operates in staging special coffee demonstrations in the store; instructs the retailer in the importance of teaching his clerks how to talk and to sell coffee intelligently; and how to prepare advertising copy for his local newspaper, so as to get the fullest measure of profit from the wholesaler's national or sectional advertising.

Coffee Sampling

The sampling method of creating a demand for merchandise has been tried in the wholesale coffee trade, only to be abandoned by the majority of packers. With other and more satisfactory ways of creating consumer interest, promiscuous sampling was found to be too expensive, in view of the comparatively small returns. One indictment against sampling is that it does not make any more impression on the average person than does an advertisement that appears only once, and is then abandoned. Wideawake merchants have learned that the public's memory is exceedingly short; and that they must keep "hammering" with advertisements to establish and to maintain a demand for their products.

It would seem that the logical place for sampling is in the retailer's store, especially in connection with demonstrations. Many progressive grocers stimulate interest in their coffees by serving, on special demonstration days, small cups of freshly brewed coffee, giving the customer a small sample of the brand or blend used, to be taken home to see if the same pleasing results can be obtained there also. Generally this form of sampling, when properly conducted, has shown a larger percentage of returns than any other method.

Premium Method of Sales Promotion

For many years, the premium method of sales promotion has been an important factor in wholesale coffee merchandising, as well as in retail distribution. The premium system has been characterized as a form of advertising; and many coffee packers and wholesalers prefer to spend their advertising appropriations in that way rather than in transitory printed advertisements in newspapers and general magazines.

While certain forms of the system have been legislated out of existence in some states, friends of the plan claim that it is a true profit-sharing method which "blesses both him that gives and him that takes"; and that it is an advanced and legitimate means of promoting business, when properly conducted. They assert that it is a system of sales promotion whereby the ad-

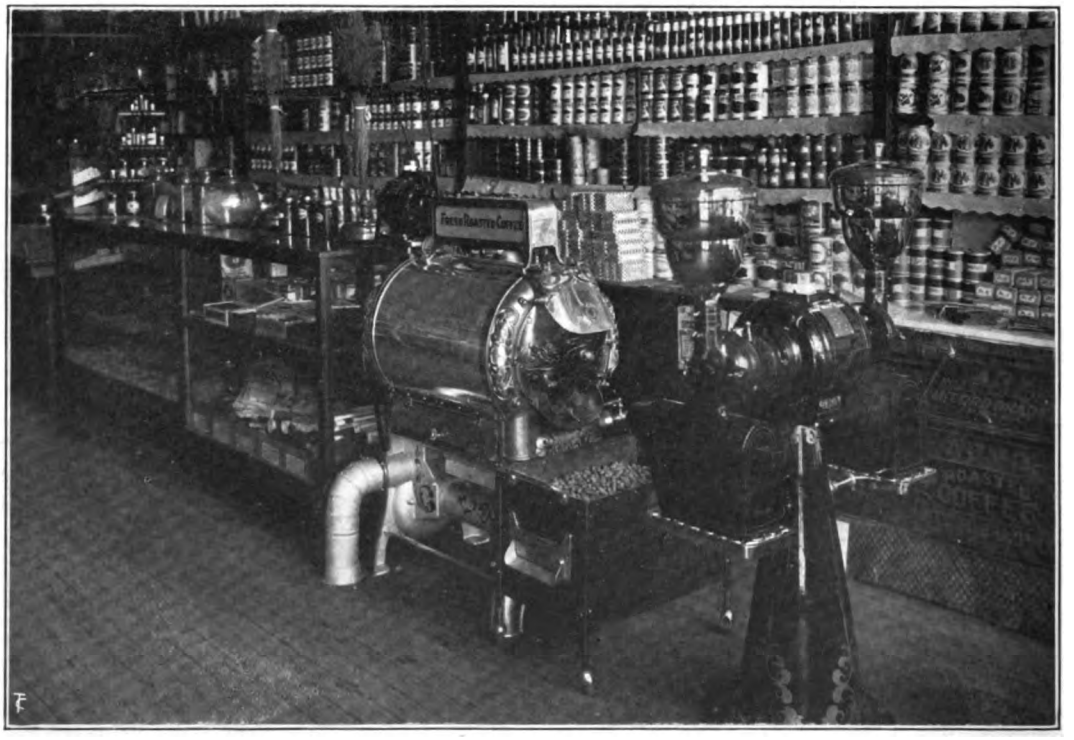
vertising expense, plus a large percentage of the profits of the business stimulated thereby, is automatically returned to the dealer buyer, without increasing cost or lowering the quality of the product so advertised; that it eliminates advertising waste by producing a given volume of sales for a given expenditure of money; that it reduces the cost of advertising by prompting a continuous series of purchases at one advertising expense; that it promotes cash payments and discourages credit business. Premium users claim that the force of a printed advertisement is often spent in stimulating the first purchase; while to secure a premium, the purchaser must continue to buy the commodity carrying the premium, or trade with the giver of the premium until merchandise of a stipulated value or quantity has been purchased.

In general practise, the premium-giving coffee packer or wholesaler may either offer the retailer an inducement in the form of a desirable store fixture, household article, or item for his personal use; or he may offer it to the consumer through the retailer.

The methods of giving the premium are numerous. To the retailer he may give the article outright with each purchase of a stipulated quantity of his coffee; or he may offer it as a prize to the retail distributer selling the most coffee in a certain period in a specified territory. Frequently the premium is of such value that the wholesaler can not give it with any quantity of coffee a distributer can dispose of in a short time; so he issues coupons or certificates with each purchase, permitting the retailer to redeem the premium when he has saved the required number. Or, the retailer may get the permium with the first purchase by paying the difference in cash.

In giving premiums to consumers, the wholesaler follows the same general plan used with retailers, except that in most cases the coupons are packed with the coffee and are redeemable at the retailer's store. Sometimes, however, the consumer sends the coupons or certificates to the wholesaler, getting the premium direct from him. In another phase of the premium system, the retailer works independently of the wholesaler, buying and giving away his own premiums to promote or to hold trade for his store. This phase is explained in the chapter on retail coffee merchandising.

LUHRS, OF POUGHKEEPSIE, N. Y., FEATURES FRESHLY ROASTED COFFEE IN HIS WINDOW
Smoke from the roasters is blown into street through the coffee pot hanging over the door



JOHNSON, OF RED OAK, IOWA, ROASTS BEFORE THE CUSTOMER
Showing a Royal roasting and grinding equipment

FRESH ROASTED-COFFEE IDEA IN RETAIL MERCHANDISING

CHAPTER XXVII

RETAIL MERCHANDISING OF ROASTED COFFEE

How coffees are sold at retail — The place of the grocer, the tea and coffee dealer, the chain store, and the wagon-route distributer in the scheme of distribution — Starting in the retail coffee business — Small roasters for retail dealers — Model coffee departments — Creating a coffee trade — Meeting competition — Splitting nickels — Figuring costs and profits — A credit policy for retailers — Premiums

COFFEE is sold at retail in the United States through seven distinct channels of trade; the independent retail grocers (about 350,000) handling about forty percent of the 1,300,000,000 pounds sold annually; and the other sixty percent being sold by chain stores, mail-order houses, house-to-house wagon-route distributers, specialty tea and coffee stores, department stores, and drug stores. Since the beginning of the twentieth century, the independent grocers' monopoly in retail coffee-merchandising has been dwindling at a rate that has seriously alarmed those interests and their friends.

B. C. Casanas of New Orleans, addressing a convention of the National Association of Retail Grocers in the United States, in 1916, said that the wholesale coffee roasters of the country had invested in their business $60,000,000; and that $135,000,000 worth of roasted coffee was sold by them every year.

Considering the methods of merchandising, the seven retail distributing agencies may be grouped into three distinct classes. The first class would comprise the independent grocer, the chain store, the department store, the drug store, and the specialty store, all of which maintain stores where the consumer comes to buy. The second class takes in the mail-order house, which solicits orders and delivers its coffee by mail, and sometimes by freight or express. The third class covers the wagon-route dealer, who goes from house to house seeking trade, and delivers his coffee on order at regular periods direct to the consumer in the home. As an inducement to contracting for large quantities to be delivered in weekly or bi-weekly periods, the house-to-house dealer generally gives some household article, or the like, as a premium to establish good-will and to retain the trade of his customers.

New impetus was given to the method of selling coffee by mail when the parcel post system was adopted by the federal government in 1912; and since then this plan has become an important factor in retail coffee-merchandising. Generally, the mail-order houses confine their sales efforts to agricultural districts and small towns, soliciting trade by catalogs, by circular letters, and by advertisements in local newspapers, and in magazines which circulate chiefly among dwellers in rural districts.

The majority of wagon-route distributers depend upon the lure of their premiums, and on personal calls, to develop and to hold their coffee trade. The leading wagon-route companies, sometimes called "premium houses", maintain offices and plants in large cities adjacent to the territories to which they confine their sales efforts. At strategic points, they have district agents

who engage the wagon men that do the actual soliciting of orders and that deliver the coffee. All wagon-route companies handle other products besides coffee, specializing in tea, spices, extracts, and such household goods as soap, perfumes, and other toilet requisites that promise a quick sale and frequent re-orders. Some of their competitors complain that they handle only the more profitable lines, leaving the independent local grocer to supply the housekeeper with the items on which the margin of profit is comparatively small.

Wagon-route coffee-retailing began to make itself felt seriously about the year 1900. At first, the premiums usually consisted of a cup and saucer with the first order, the customer being led to continue buying until at least a full set of dishes had been acquired. Later, the range of premiums was expanded; until today the wagon man offers several hundred different articles that can be used in the home or for personal wear or adornment. Practically all the leading wagon-route concerns favor the advance premium method; that is, a special canvasser induces a consumer to contract for a large quantity of coffee and other products in return for receiving the premium at once, though the coffee is delivered only as the customer wants it, generally two pounds every two weeks. The wagon man delivers the coffee, and is usually held responsible for the customer fulfilling the agreement, and is expected to secure repeat orders with other premiums.

The importance of the wagon-route plan of coffee-retailing is shown by the fact that in 1921 there were six hundred houses of this kind in the United States; and it was estimated that they distributed eight per-cent of the total amount of the coffee consumed in the country. The biggest company was capitalized at $16,000,000, and operated eleven hundred wagons. Most of the wagon-route concerns were operating in the central states, practically one-third of them covering the states of Illinois, Wis-

A Premium Tea and Coffee Dealer's Display Room

This is the headquarters store of the Geo. F. Hellick Co., Easton, Pa., a successful wagon coffee distributer. The premium merchandise is shown in the foreground: the sales counter, coffee mill, and display of teas, coffees, extracts, spices, etc., being in the right background

TYPICAL CHAIN-STORE INTERIOR EQUIPMENT
This is the Atlantic & Pacific Co.'s store in Rhinebeck, New York. There are nearly 5,000 other stores like it in the United States

consin, Indiana, and Iowa. Pennsylvania is also a wagon-route-dealer center.

The premium wagon-route distributers have an organization called the National Retail Tea and Coffee Merchants' Association. It is composed of 126 members — all of whom use premiums — who operate over two thousand wagons. The largest single wagon-route operator is the Jewel Tea Company of Chicago. The members of this organization claimed to have served more than 2,000,000 families in 1920.

In the chain-store system of merchandising we see the opposite extreme of coffee retailing. The wagon-route man features his delivery service; while in the chain-store plan, all customers must pay cash and carry home their parcels. Though the earliest established chain stores gave premiums, the practise has now been generally abandoned. Roasting, blending, and packing coffee in a large central plant, the chain-store operator advertises that he can sell coffee at a price lower than his competitors. As a rule, only one grade of coffee is offered for sale. While it is generally a good medium value, many consumers prefer better quality and go to the independent grocer for it. Others patronize the grocer because of his convenient delivery service, and because he gives credit on purchases. Chain-store organizations seem to be growing rapidly, however; the largest of the chains, the Great Atlantic & Pacific Tea Co., reporting in 1921 that it had nearly five thousand branches throughout the country, which sell 40,000,000 pounds of coffee annually. This chain has a capitalization of $12,000,000, and in 1920 sold $225,000,000 worth of groceries, as compared with $154,718,124 in the preceding year. This company opens about five hundred new stores every year.

The chain-store men are organized in the National Chain Store Grocers Association, having thirty members, representing 12,000 stores, operating in eighteen states. It is estimated that there are fifty responsible chain-store grocery organizations in the United States, representing about 30,000 stores. The chain-store grocer turns his stock over from twelve to twenty-five times a year, sells for cash, makes no deliveries, and claims to save the consumer an average of fifteen percent in buying. These stores do business on a net margin not exceeding three percent on sales, as against the average retail grocer's thirty percent, while their average gross cost of doing business has been stated as between thirteen and

one-half percent (lowest) and eighteen and one-half percent (highest).

According to Alfred H. Beckmann, secretary-treasurer of the National Chain Store Grocers' Association,[1] "Public appreciation of the chain grocery store is rapidly growing. Ten years ago it was estimated that chain stores in what is known as the Metropolitan district of New York did about 12½ percent of the volume of business in their line, while today it is estimated at about fifty percent".

It is estimated that the fifty-odd chain store organizations in the United States distribute through their 30,000 stores 270,000,000 pounds of coffee a year, or about twenty percent of the total amount consumed in the United States.

Starting in the Retail Coffee Business

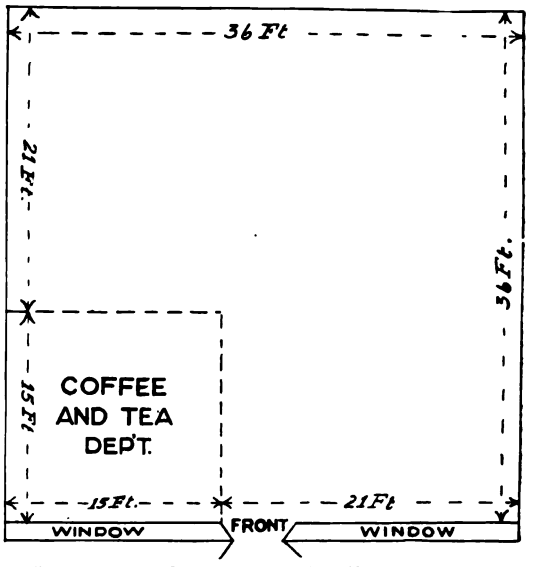
When taking up the retail merchandising of coffee, the practical grocer learns all he can about the popular grades to be had in the principal markets, and how the coffees are grown, roasted, blended, and ground. He also ascertains the best methods of brewing, testing out each grade and kind on his own table, if he does not have testing facilities in his store. He studies the relative trade values of different varieties of coffee, and the requirements of his particular clientele.

An interesting analysis of some 250 grocery stores in the United States[2] made in 1919, showed that twenty-nine percent of the dealers bought all their coffee from wholesale grocers, forty-eight percent exclusively from roasters and specialty wholesalers, ten percent got over one-half of their coffee from wholesale grocers, and thirteen percent bought less than one-half from the wholesale grocery houses.

[1] *Tea and Coffee Trade Jour.*, 1922 (vol. xlii: no. 1: pp. 75, 76).

[2] Bureau of Business Research, Harvard University.

THE FAMILIAR A & P STORE FRONT

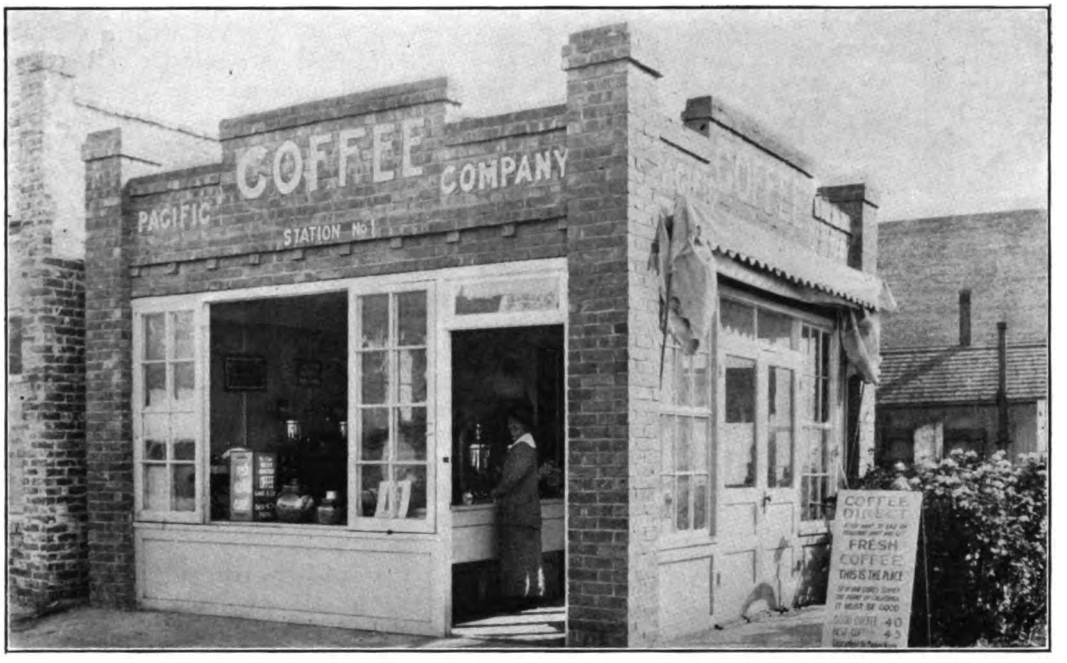


LAYOUT FOR COFFEE AND TEA DEPARTMENT

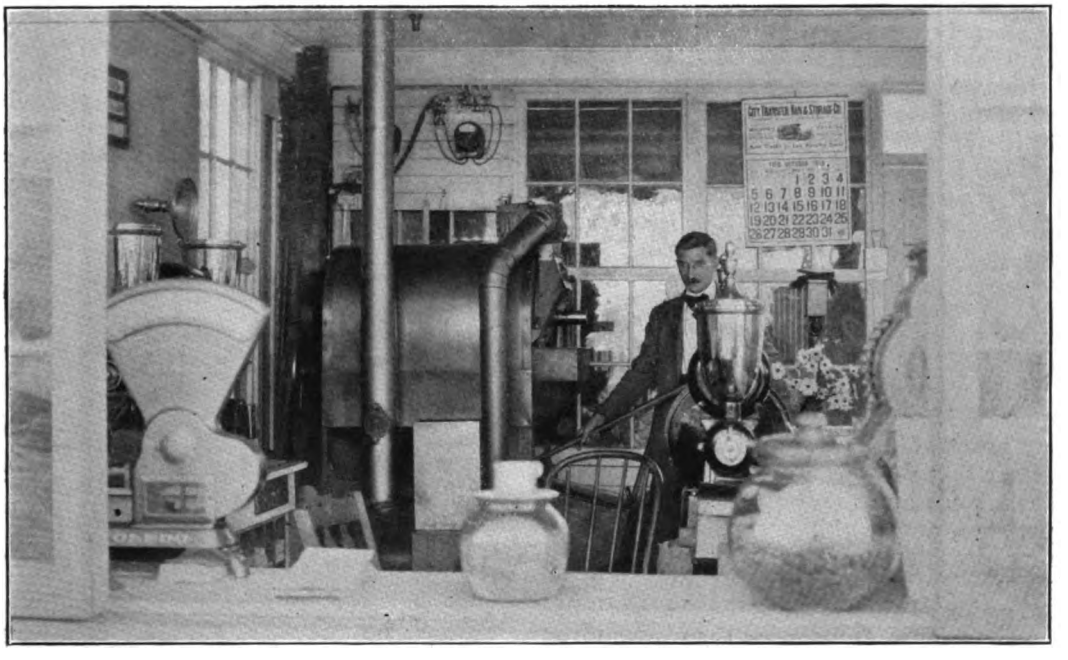
There are two fundamental plans on which a retailer builds a successful coffee business — by buying coffee already roasted, and by buying it green and roasting it in the store. Each plan has its advantages; but its practicability depends upon conditions in different localities.

Beyond acquiring a general talking knowledge about coffees, the retailer buying his stocks roasted in bulk or package form does not generally need the intimate knowledge of his goods required by the grocer who roasts his own coffee. If he grinds the coffee for his customers he must know the type of grind best suited to the way the coffee is to be brewed, and must be able to tell the best brewing method.

The practical grocer who makes up his own blend is acquainted with blending principles and methods. While he can not expect to be as expert as the large wholesale blender, he should know that green coffees are generally classified by blenders in five great divisions; (1) Brazils, including Santos, Bourbon and flat bean, Rios, Victorias, and Bahias; (2) Washed milds, embracing, as of the most commercial value, Bogotas, Bucaramangas, Guatemalas, Mexicans, Costa Ricans, Maracaibos, and Meridas; (3) Unwashed milds, such as Maracaibos, Bucaramangas, La Guairas,



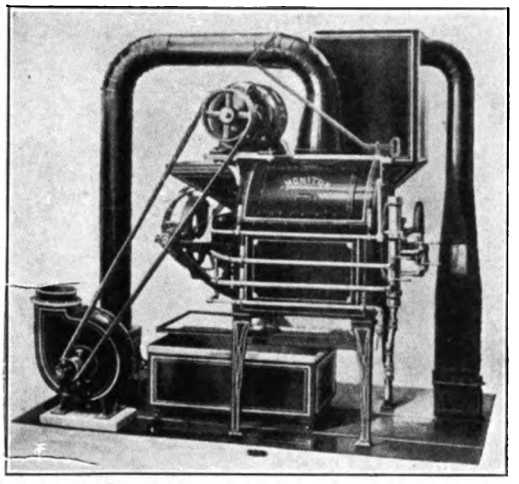
ONE OF THE RETAIL COFFEE-ROASTING STATIONS IN SOUTHERN CALIFORNIA



CLOSE-UP OF THE MINIATURE MANUFACTURING PLANT, SHOWING THE ROASTING AND GRINDING EQUIPMENT

APPLYING THE SPECIALIST IDEA TO COFFEE MERCHANDISING

The Pacific Stores Co., Los Angeles, cutting out deliveries, premiums, and solicitors, has built up a business of more than 100 bags of coffee daily, selling direct to the consumer in a chain of 100 booths patterned after the country-roadside gasoline stations; each one having its own roaster



SELF-CONTAINED MONITOR GAS ROASTER, COOLER, AND STONER

and Mexicans; (4) Javas, Sumatras, and Padangs; (5) Mocha, and Harari.

It has been found by experience that a good assortment for the average retailer to carry consists of Santos, because of price; a natural unwashed Maracaibo or Bucaramanga, because of full body and general blending values; and a washed coffee, preferably a Bogota, which gives quality and character to a blend. In stocking up with these coffees, the practical merchant avoids Santos with a strong or Rioy flavor, bitter or "hidey" Maracaibos, and acidy or thin Bogotas.[1]

A grocer equipped with these coffees has the Santos for his low-priced seller. For his medium grade he blends Santos and Maracaibo, half-and-half. The next higher grade is made up of one-third each of the three coffees; while the best blend consists either of half-and-half Bogota and Maracaibo, or three-quarters Bogota and one-quarter Maracaibo.

The chief advantage of these three coffees is that they blend well in any way they are mixed; and the dealer with a little experience, and working with the two necessary ideas in mind — satisfactory coffee and price — can make up various combinations.

In view of the fact that the United States imports coffee from more than a hundred different sections of the world, and that there are wide variations in flavor among the coffees produced in each of the hundred, it is easy to understand that the blender has an almost unlimited supply from which to make up a blend with a distinctive individuality. Practically all coffee importers, and most wholesalers, are thoroughly acquainted with the relative trade values of the different coffees, and help their customers make up desirable blends.

Small Roasters for Retail Dealers

While the wholesale coffee roaster is obliged to instal a large and somewhat complex equipment, the retailer must use a small, compact, self-contained unit that does not take up much space in his store, and that is easily operated. Retail roasting machines are constructed on the same general principle as the wholesale roaster. The roasting cylinder is generally revolved by electric power, and the heat is derived from gas or gasoline fuel. Cooling is by air suction in a box attached to the roaster. The capacities of the machines range from ten to three hundred pounds, the operating cost running from approximately eight cents per hundred pounds for gas fuel and ten cents for electric power. The roasters cost from three hundred dollars for the smaller sizes, to fifteen hundred for the one-bag type; and to two thousand or three thousand dollars for the two-bag type.

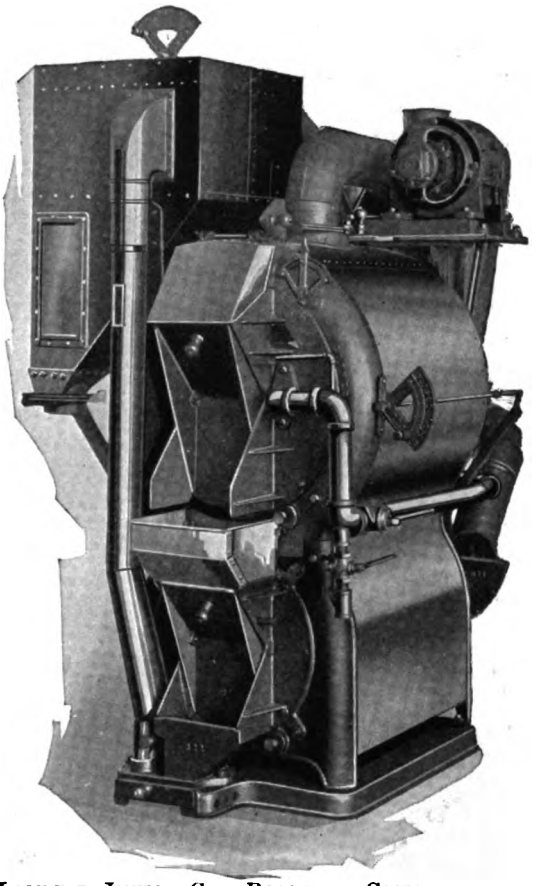
One coffee-roaster-machinery manufacturer has recently brought out a gas-fired, electrically operated fifty-pound miniature coffee-roasting plant designed for retail stores, which comprises a roaster, a rotary cooler, and a stoning device, that sells for six hundred and fifty dollars.

ROYAL GAS COFFEE ROASTER FOR RETAIL STORES

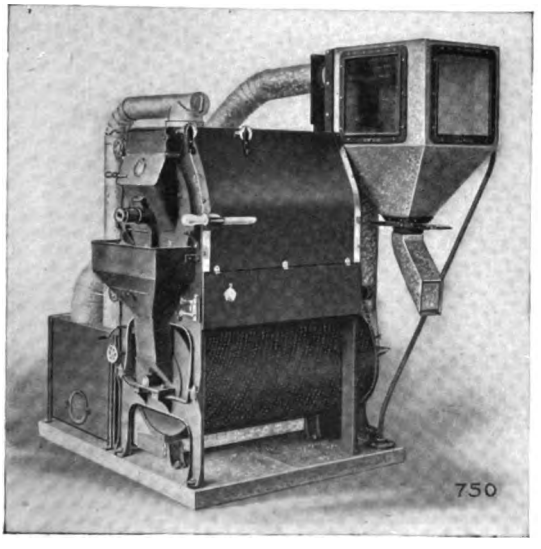
[1] Duryee, P. S. *Tea and Coffee Trade Jour.*, 1911 (vol. xxi: no. 2: pp. 106-110).

Retail coffee roasting is similar to the wholesale operation. When the cylinder has become heated, the green coffee is run in and allowed to roast in the revolving cylinder for about half an hour. If the coffee is the average green kind, the full heat may be applied at once; but if old and dry, a lesser degree is used. When the roast begins to snap, the flame is turned lower to allow the beans to cook through evenly; and when nearly done, it is almost extinguished. During the operation, the roasterman, who may be the proprietor or a clerk delegated to the work, frequently "samples" the coffee by taking out a small quantity with his "trier" and comparing the color of the roast with a type sample. When the colors match exactly, the coffee is dumped automatically into the cooler box just below the cylinder opening; and when sufficiently cooled off, is ready for grinding to order.

A large number of retailers roast coffee in their stores; and the most successful find that besides being able to make a feature of freshly roasted coffee, they can save money and increase their sales. One progressive grocer found that he was able to get eighty-eight pounds of roasted coffee out of one hundred pounds of green coffee, as compared with the wholesaler's eighty-four pounds; that he could buy green coffee at a closer price than roasted; and that it cost him less for labor, fuel, overhead, and similar items, than it did the wholesale roaster to turn out a roast.[4]



LAMBERT JUNIOR GAS ROASTING, COOLING, AND STONING OUTFIT FOR RETAIL STORES
(Capacity fifty pounds)



BURNS HALF-BAG GAS ROASTING, COOLING, AND STONING OUTFIT

A chain of coffee specialty stores in which the coffee is roasted fresh every day was started in California about the year 1916; and according to reports, it met with almost instant success. In this system, the proprietor buys the green coffee in large quantities, and it is roasted in each of his specialty stores, which are located in public markets, store windows, and alongside heavily traveled highways. The roasting machinery is invariably set up in front of the store where passers-by can easily see it in operation — and also smell the coffee roasting. Four years after starting the first store, there were fifty in operation along the Pacific Coast, doing an annual business of about $600,000, some units taking in more than $7,000 a month.

[4] Findlay, Paul. *Tea and Coffee Trade Jour.*, 1916 (vol. XXX: no. 1: pp. 72-74).

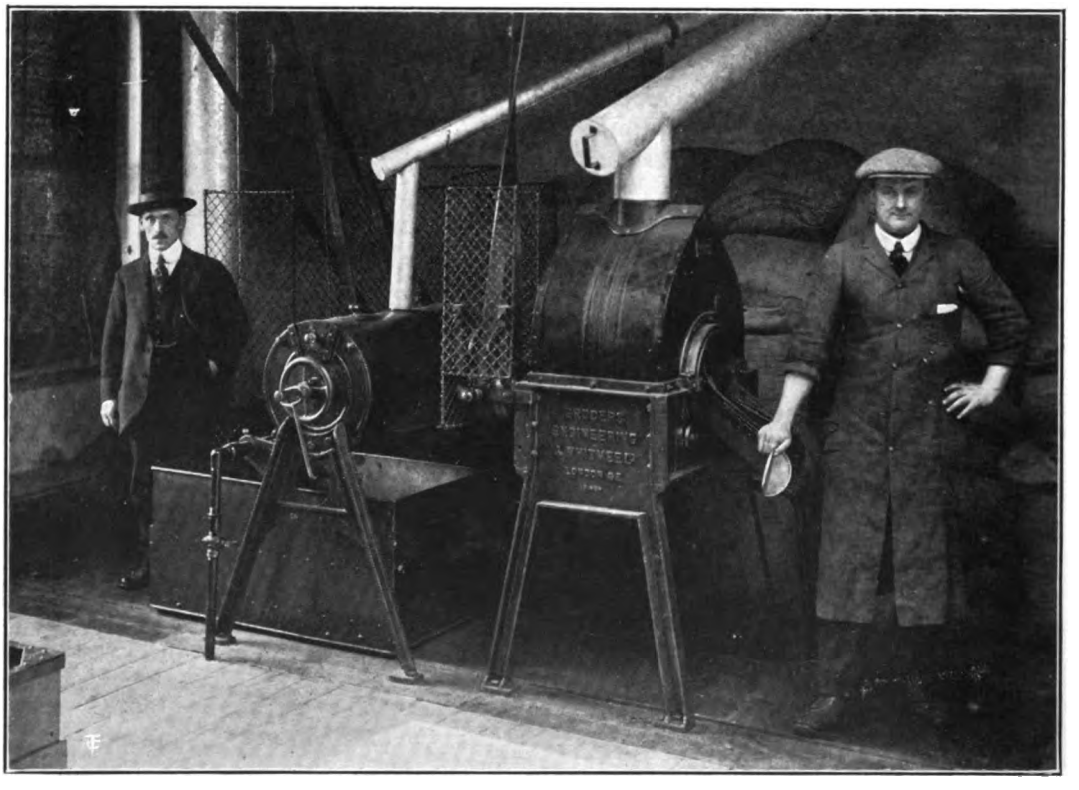
Model Coffee Departments

Authorities generally agree that a well laid out coffee department not only increases a grocer's coffee business, but speeds up sales in other departments as well. Coffee lovers, and they are legion in the United States, are inclined to "shop around" for a coffee that suits their taste; and when they have found the store that sells it, they buy their other groceries there also. Another argument advanced in favor of a coffee department is that coffee pays more money into the retailer's cash drawer than any other grocery item.[5]

Most successful retail coffee merchandisers establish the coffee department near the entrance to the store, where it can be seen through a window by passers-by, especially if there is an ornamental roasting and grinding equipment. It has been found that a department situated at the left of the entrance is almost certain to draw attention because people are inclined to glance in that direction first. Some merchants, having the space, erect attractive booths, designed somewhat like the familiar food-show booths, directly in front of the door, after the fashion of department stores when holding a special sale on a certain article. Such a booth is generally used for demonstration purposes, and is decorated with signs and possibly with bunting. A permanent department is usually less ornamental, but still attractive. In telling how he made a success of his department, one American grocer said that he was careful that his fixtures were not so ornamental as to draw attention from the goods. While the decorations were always attractive, they were subordinated sufficiently to form a background for his coffee display.

The most popular layout is the conventional counter system behind which the clerk stands to serve the customer on the other side. There are many advocates of the counter that is built into the shelving, believing that the closer the customers are brought to the coffee, the more they will be

[5] Atha, F. P. *Tea and Coffee Trade Jour.*, 1919 (vol. xxxvii: no. 1: p. 30).



FAULDER AND SIMPLEX GAS ROASTERS IN AN ENGLISH FACTORY

The Faulder (on the left) is a 28-lb. indirect machine, and the Simplex (also 28 lbs. capacity) is of the direct-flame, quick-roaster type

ILLUSTRATING THE COFFEE ROASTERS USED BY THE SHOP-KEEPERS OF FRANCE

These machines are of the ball-cylinder type, and use gas as fuel; the cylinder is revolved by electric power. Invariably they stand where they can be seen from the street

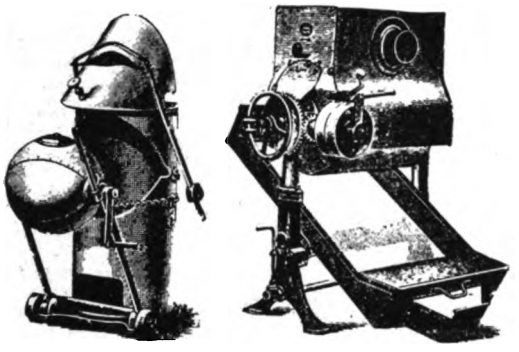
inclined to buy. This system also makes for cleanliness, doing away with the possibility of the runway behind the counter becoming a catch-all for dirt, torn paper, bits of wood, and the like.

The modern coffee department has counters divided into compartments having glass fronts. This type serves both as a storage place for coffee and for display purposes. The top of the counter is used for wrapping up parcels, etc., and also for displaying bulk and package coffees. In the well regulated store, the counter top is never used for storage, all stock being kept on shelves or in the counter's compartments. Good merchants find that cleanliness pays; and that a "littered up" store drives away desirable custom. The wise proprietor never allows a clerk to weigh out coffee after handling cheese, onions, and other odorous articles, without first thoroughly washing his hands. He knows that few food products in his store will more quickly absorb undesirable odors and flavors than coffee; and consequently he is careful to protect his coffee from contamination. In the better stores, the proprietor will either take charge of the coffee department himself, or will delegate a competent man who will do nothing else.

The wide-awake retail coffee roaster always features his roasting machine, which is generally highly ornamental and draws attention even when not in use. Some progressive merchants plan to roast coffee at noon time and at night, when homeward-bound passers-by are hungry and are particularly susceptible to the pungent aroma of roasting coffee. It is a quite common plan for the retail roaster to arrange the exhaust of the machine so that the full strength of the odor is blown into the street.

Creating a Coffee Trade

Because of steady sales and quick profits, there is keener competition in retail coffee-merchandising than in other food products. But, all things being equal, any intelligent person can create and hold a profitable trade if he follows approved business methods — and works. The best practise among coffee merchants shows that the prime essential is good coffee, freshly roasted and ground. After that comes intelligent and unremitting sales-promotion work.

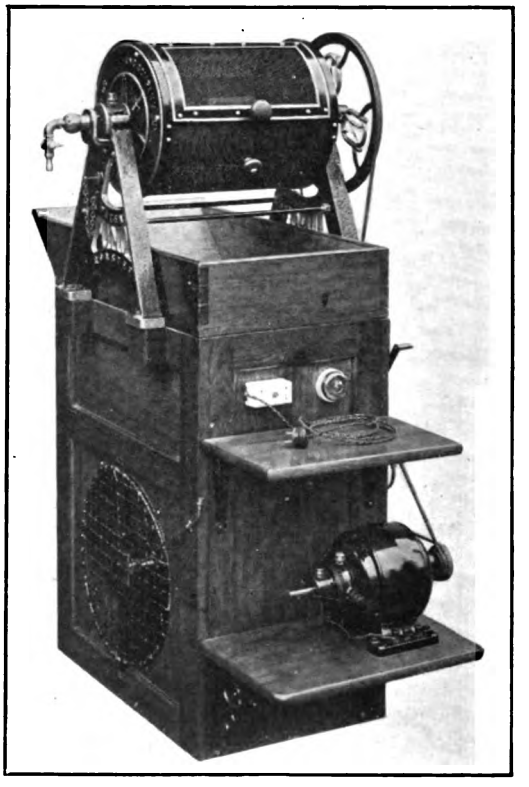


SMALL GERMAN ROASTERS
On the left is a hand roaster for wood or coal fuel; on the right is a gas machine.

The many ingenious trade-building plans worked out successfully by grocers in all parts of the country are too numerous to describe in a book of this character; but the methods cited in the following, all of which have been tested in actual working conditions, will serve to indicate the fundamentals of good retail coffee-sales promotion.

Among the chief sales-winning methods are demonstrations in the store, at local food shows, and at church socials, picnics or functions, judicious sampling either in person or by mail, personal canvassing from house to house, circularizing by mail, linking up window displays with current happenings, local newspaper and outdoor poster advertising, and selling coffee by telephone. Most of the foregoing plans are worked intermittently. The telephone, however, is a most important sales factor and should be employed constantly and consistently.[6] Many successful stores consider the telephone, properly used, the greatest single sales-help in retail coffee-merchandising.

One grocer had such faith in this method that he paid half the annual telephone rental for a large number of his best-paying customers. Another large merchandiser put in an individual telephone for each of his salesmen, who called up his regular customers each day to suggest articles for that day's order, always of course mentioning their "superior brand of coffee." Telephoning is the next step to personal contact; and if tactfully done, is considered to be even more advantageous, because of the time it saves both the customer and the store keeper.



UNO CABINET GAS ROASTER WITH COOLING UNIT
A popular English type

POPULAR FRENCH RETAIL ROASTER
Employing coal, charcoal, or wood fuel

Coffee demonstrations in stores are easily arranged, in most cases. The main consideration is fresh coffee of good quality served daintily and hot. Lacking a coffee urn, some grocers make their brews in

[6] Weir, Ross W. *Tea and Coffee Trade Jour.*, 1913 (vol. xxv: pp. 566-568).

large-size home-service coffee-making devices. Those most advanced in the correct method of brewing use the drip process. It is generally agreed that demonstrations should not be held too often. They not only cut into profits, but lose much of their advertising value. Food-show demonstrations require more elaborate equipment, consisting of a decorated booth, educational booklets, posters, and exhibits of different kinds of coffee, both green and roasted, whole bean and ground. Generally, coffee packers cooperate with retail demonstrators by supplying gratis the coffee to be brewed, if the names of their brands are suitably displayed. They supply also posters, signs, samples, and booklets for free distribution.

Window displays form one of the best means of advertising at the command of the average grocer, and one of the least expensive. A popular coffee display consists of a series of educational "windows," starting with green beans in the bags in which they are shipped from the growing country. Generally the bags, mats, or bundles are obtained from the wholesale house, and are filled almost to the top with some inexpensive stuffing, the green coffee being spread over the top to give the appearance of a full bag. Pictures showing how the coffee is grown, harvested, prepared, and shipped, are frequently used in such a display. The next exhibit consists of whole roasted coffee spread thickly over the window floor to create the impression of bulk, accompanied by a few pans of green coffee by way of contrast, and with pictures showing scenes in coffee roasting plants. A barrel, lined with blue paper, and lying on its side with roasted coffee beans spilling out, serves as a centerpiece for such a display. Following this, comes a coffee package window, accompanied by pictures showing how coffee is roasted, ground, and packed. This completes the series; but there are many variations that have proved successful as trade builders.

EDUCATIONAL WINDOW EXHIBIT

This window won first prize for the western district in the $2,000 window-trimming contest of National Coffee Week in 1920. Action was furnished by a small electric pump, which kept a steady stream of coffee flowing from a coffee pot into the coffee cup

Meeting Competition

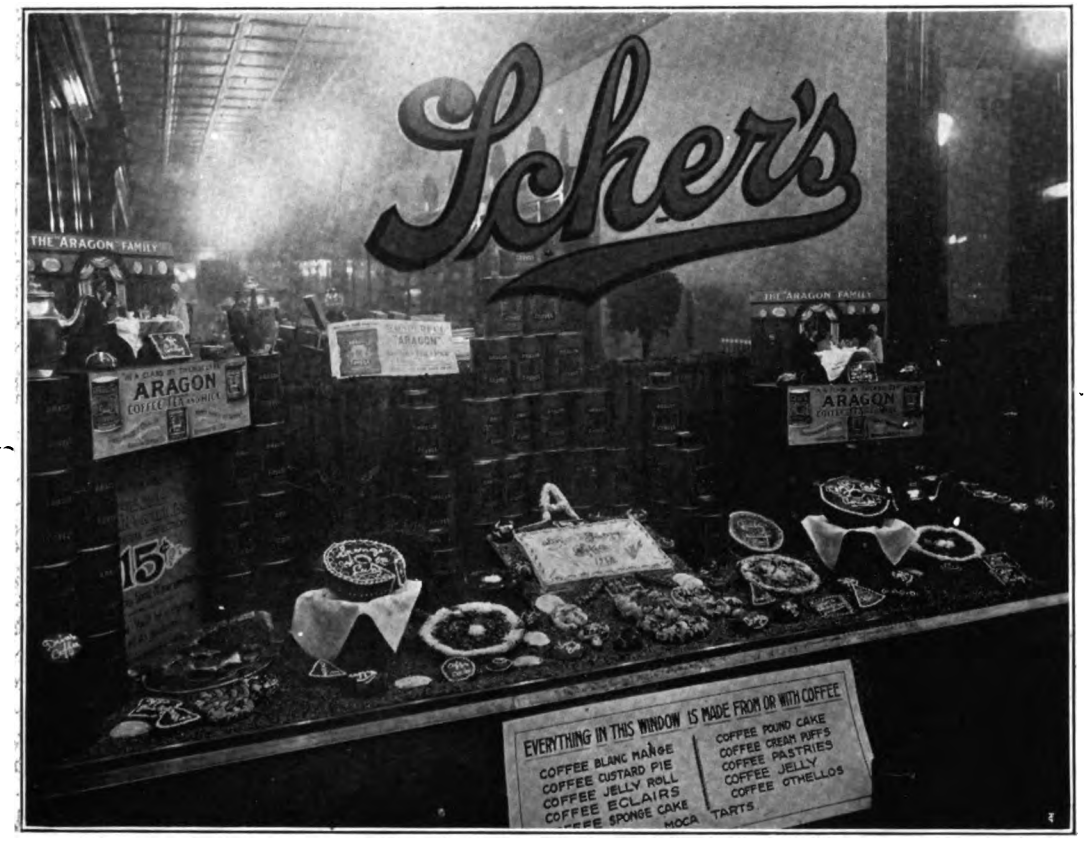
Since the advent of the wagon-route distributer and the chain store, the independent retail grocer has been faced with the problem of how to regain at least a fair measure of the coffee trade he has lost. The grocer is not only concerned about his profits on coffee sales, but on other goods as well; for a trade investigation has shown that a large percentage of the regular customers of the retailer are held to the store by their purchases of coffee and tea. This means that if coffees and teas are bought from the wagon-route distributer and the chain store, the balance of a family's order is "shopped around."

To meet this competition, the best authorities agree that the independent grocer should feature coffee in every practical way, such as soliciting coffee trade from each customer that enters the store; give up offering coffee on a price basis, and make up his own blends from good quality growths; perhaps make up his own brand and push it at every opportunity; display coffee artistically, with frequent changes of layouts; and have occasional store demonstrations. He should see that the coffee is roasted properly, and that it is always fresh; that the selling effort is not expended on the lowest-priced blend, but on a grade that can be recommended for cup merit. This should be a leader, but a lower-price coffee could be carried to suit the trade that buys on price. Persistent efforts should be made to educate the last-named class of customers to use the better grades, which in the end are cheaper and give better satisfaction. In short, the grocer should work consistently to establish a vogue for his leader blend on the basis of merit.

Profits and Costs

Because of its influence on other grocery items, coffee can often be sold at a close margin of profit, particularly if a competitor's store or wagons are cutting into a grocer's neighborhood trade. Twenty-five percent is recommended as a reasonable gross profit on coffee in most cases, although some grocers make less, and not a few make more; the range being usually from twenty to thirty-nine percent. The independent dealer should meet chain-store

A Better-Class American Grocery Interior
Showing the coffee bins in orderly array, and the electric coffee grinder



A Prize-Winning Window Display

This unusual display of coffee-flavored eatables won first prize for the southern district in the National Coffee Week window-trimming contest. The cakes, pies, tarts, and other pastries which constituted the main feature rested in a bed of green coffee. The customer's interest was cleverly attracted to the dealer's brand by a pyramid of large coffee cans in the center background and by two miniature dining-room sets.

competition in coffee on a price basis, making a special on a superior grade and figuring to get not more than three cents profit per pound, like his competitor. A bag of roasted coffee will bring back three dollars gain, and the cash to pay for another — and the grocer has kept his customers, ninety percent of whom, theoretically, will have bought their other food supplies from him. As a matter of fact, in the last year of the World War retailers showed a tendency to demand cash on sales of all grocery items. This practise reduces the cost of operation and allows the storekeeper to reduce his prices. A large number of grocers charge a small percentage of the total sale for credit privileges, and five or ten cents for each delivery below a certain total value of the purchase price of the articles to be delivered. As a result, they have been able to meet chain-store competition. Collective buying has also been a factor in offsetting the inroads of the "chains."

Splitting Nickels

One of the reasons advanced for the loss of coffee trade by retail grocers is that they price their blends in "round numbers", that is 20, 25, 30, or 40 cents; while their competitors "split nickels", selling their product at 18, 23, 28, or 38 cents.

Most of the retail enterprises in other lines of trade have built up their business on the penny-change plan; and many coffee men believe this should become the universal merchandising method among retail distributers of coffee.[7]

One of the leading advocates of "splitting nickels" has worked out a chart to show how coffee should be priced to make predetermined profits. (See next page.)

[7] McCreery, R. W. *Tea and Coffee Trade Jour.*, 1913 (vol. xxv: no. 6: pp. 603-604).

TABLE SHOWING PROFIT PERCENTAGE ON SALES

If Your Coffee Costs	And You Sell At 25c.	26c.	27c.	28c.	29c.	30c.	31c.	32c.	33c.
20c.	20%	23%	26%	28%	31%	33%	35%	37%	39%
20½c.	18%	21%	24%	26%	29%	31%	33%	35%	37%
21c.	16%	19%	22%	25%	27%	30%	32%	34%	36%
21½c.	14%	17%	20%	23%	25%	28%	30%	32%	34%
22c.	12%	15%	18%	21%	24%	26%	29%	31%	33%
22½c.	10%	13%	16%	19%	22%	25%	27%	29%	31%
23c.	8%	11%	14%	17%	20%	23%	25%	28%	30%
23½c.	6%	9%	13%	16%	19%	21%	24%	26%	28%
24c.	4%	7%	11%	14%	17%	20%	22%	25%	27%
24½c.	2%	5%	9%	12%	15%	18%	21%	23%	25%
25c.	0%	3%	7%	10%	13%	16%	19%	21%	24%
25½c.		2%	5%	8%	12%	15%	17%	20%	22%
26c.		0%	3%	7%	10%	13%	16%	18%	21%
26½c.			1%	5%	8%	11%	14%	17%	19%
27c.			0%	3%	6%	10%	12%	15%	18%
27½c.				1%	5%	8%	11%	14%	16%
28c.				0%	3%	6%	9%	12%	15%

Figuring Costs and Profits

While the cost of conducting a retail grocery business naturally varies according to local conditions and the size of the enterprise, an investigation among some 250 stores in small and large cities made in 1919 by the Bureau of Business Research, Harvard University, showed that the average cost was fourteen percent; that the net profit averaged two and three-tenths percent; and that stock was turned about seven times a year. Gross profits ran from ten and one-half percent to twenty-six and four-one-hundredths percent of the net sales, the most typical figure being sixteen and nine-tenths percent. Sales cost formed the largest single item of expense, varying from three and forty-one hundredths to nine and ninety-four hundredths percent, with the bulk of figures showing around one and eight-tenths percent.

According to advanced business practise the cost of doing business should be based on these fourteen points:

1. Charge interest on the net amount of the total investment at the beginning of the business year, exclusive of real estate.
2. Charge rental on real estate or buildings at a rate equal to that which would be received if renting or leasing to others.
3. Charge, in addition to what is paid for hired help, an amount equal to what the proprietor's services would be worth to others; also treat in like manner the services of any member of the family employed in the business and not on the regular payroll.
4. Charge depreciation on all goods carried over on which a less price may have to be made because of damage or any other cause.
5. Charge depreciation on buildings, tools, fixtures, or anything else suffering from age or wear and tear.
6. Charge donations and subscriptions paid.
7. Charge all fixed expenses, such as taxes, insurance, water, lights, fuel, etc.
8. Charge all incidental expenses, such as drayage, postage, office supplies, livery expenses of horses and wagons, telegrams and telephones, advertising, canvassing, etc.
9. Charge losses of every character, including goods stolen, or sent out and not charged, allowances made customers, all debts, etc.
10. Charge collection expense.
11. Charge any other expense not enumerated above.
12. When it is ascertained what the sum of all the foregoing items amounts to, prove it by the books, which will give the total expense for the year; divide this figure by the total of sales, and it will show the percent which it has cost to do business.
13. Take this percent and deduct it from the price of any article sold, then subtract from the remainder what it cost (invoice price and freight), and the result will show the net profit or loss on the article.
14. Go over the selling prices of the various articles and see what are profits; then get busy in putting your selling figures on a profitable basis and talk it over with your competitor as well.

A Credit Policy for Retailers

While the minor factors governing a credit policy for retailers vary with local conditions, the fundamental principles are alike everywhere, and should have the thoughtful consideration of all retail distributers of coffee. After a retail grocery store experience of twenty-five years, a past president of the National Association of Retail Grocers of the United States[5] found that a grocer should insist upon references and a thorough investigation of every new applicant for credit, refusing the privilege when the prospective customer hesitates to give the needed information; that he should arrange a date for periodical payments, explaining that this is necessary so that the storekeeper can arrange to meet his own bills, which will enable him to discount his invoices and to sell his goods cheaper; that statements of accounts should be sent out promptly and never a few days late; that he should insist on payment in full when due, requesting the customer to call if an extension of time is asked; that he should not let the customers decide when they will pay bills, bearing in mind that the possible loss of a few customers who do not pay promptly is offset by the advantages of cash when promised; that he should never abandon the hope of collecting an old account, but should try the method of sending statements only to the surest customers, sending a clerk for the collection of all other accounts; that he should personally examine

[5] Schaefer, J. H. *Tea and Coffee Trade Jour.*, 1917 (vol. xxxiii: no. 1: p. 72).

all uncollected accounts every month, insisting on a reason for failure to pay; that he should study his customers and not trust those who give a bad impression; that he should have the courage to say "No" when necessary; not to be satisfied with merely a financial rating on a credit applicant, but to ascertain his general reputation and character; and to help to eliminate the "dead beats" by giving careful attention to all requests received from other retailers for credit information.

Premiums for Retailers

House-to-house dealers are the largest users of premiums among coffee distributers. Most of them operate under what is known as the advance-premium method.

The plan followed by house-to-house dealers until about 1910 was to issue checks redeemable in premiums after a certain amount of tea, coffee, or other products had been purchased. This practise has not been entirely abandoned; but in most instances, the premium is now handed to the consumer in advance of the initial purchase, in consideration of the buyer's promise to use a stipulated quantity of tea, coffee, or other merchandise. The driver of the wagon generally carries a portfolio illustrating numerous premium items redeemable through the purchase of varying amounts of merchandise.

Many retail coffee stores also employ premiums, using both the old-style and "advance" methods.. This type of store, however, is being supplanted by the chain grocery store.

Some independent retail grocers use premiums to a limited extent. These usually carry a small line of premiums, featuring a piece of kitchenware, or other inexpensive item, with bulk coffee.

It is significant that one of the largest chain-store organizations in the United States — the Great Atlantic & Pacific Tea Company — uses few premiums today, although its business was founded on the premium idea.

Trading stamps, which are sold to grocers and other merchants by firms making a specialty of this form of premium-giving are little used nowadays. The average retail grocer is antagonistic to trading stamps, as a result of the methods of certain unscrupulous stamp-dealers. Legislation against trading stamps is in effect in many states.

AN AMERICANIZED ENGLISH GROCER'S SHOP

Ernest Carter's store at St. Albans, England, operated under the name of Thomas Oakley & Co., has a distinctly American atmosphere, accounted for by the fact that the fittings were supplied by an American manufacturer, the Walker Bin Co., of Penn Yan, N. Y. The tea and coffee department is shown in the foreground. The coffee is roasted in the window

SOME PACKAGE COFFEES THAT ADVERTISING HAS MADE FAMOUS

Chapter XXVIII

A SHORT HISTORY OF COFFEE ADVERTISING

Early coffee advertising — The first coffee advertisement in 1587 was frank propaganda for the legitimate use of coffee — The first printed advertisement in English — The first newpaper advertisement — Early advertisements in colonial America — Evolution of advertising — Package coffee advertising — Advertising to the trade — Advertising by means of newspapers, magazines, bill-boards, electric signs, motion pictures, demonstrations, and by samples — Advertising for retailers — Advertising by government propaganda — The Joint Coffee Trade publicity campaign in the United States — Coffee advertising efficiency

IN a work of this character the chapter on advertising must of necessity be in story form. It may tell what has been accomplished in advertising coffee, and perhaps point the way to greater achievement. In so far as possible, the story is supplemented by illustrations, which here tell the story even better than words.

Advertising to the trade or the consumer calls for expert advice. There are successful trade journalists who are competent to supply such advertising counsel; and newcomers in the field should consult them first. These men are in the best position to suggest the means for successful accomplishment. They know the men who are best qualified to render assistance for all media, and are glad to recommend those who can be most helpful.

Jarvis A. Wood has said that advertising is causing another to know, to remember, and to do. If we agree with this excellent definition, then the first coffee advertisers were the early physicians and writers who told their fellows something about the berry and the beverage made from it.

Rhazes and Avicenna told the story in Latin, and appear to have recommended a coffee decoction as a stomachic, as far back as the tenth century. Many other early physicians refer to it. Thus it was that coffee was solemnly introduced to the consumer as a medicine. The first step made by the berry from the cabinets of the curious, where it was known as an exotic seed, was into the apothecaries' shops, where it was sold and advertised as a drug. Next the coffee drink was advertised and sold by lemonade venders; then by the proprietors of the coffee houses and cafés; and finally the coffee merchant sold and advertised the green and roasted bean.

Rauwolf told the Germans about it in 1582; Abd-al-Kadir wrote his famous *Argument in favor of the legitimate use of coffee* in Arabic about 1587; Alpini carried the news to Italy in 1592; English travelers wrote about the beverage in the sixteenth and seventeenth centuries; French Orientalists described it about the same time; and America learned about it long before the green beans were offered for sale in Boston in 1670.

Because of its frank propaganda character, Abd-al-Kadir's manuscript may rightly be called the earliest advertisement for coffee. The author was a lawyer-theologian, a follower of Mahomet, and as such was eager to convince his contemporaries

that coffee drinking was not incompatible with the prophet's law.

Soon the news of the day became the advertising of the morrow. In 1652 appeared the first printed advertisement for coffee in English. It was in the form of a shop-bill, or handbill, issued by Pasqua Rosée from the first London coffee house in St. Michael's Alley, Cornhill; and the original is preserved in the British Museum.

It is pictured on page 55, chapter X, and is worthy of close examination. It reads:

The Vertue of the *COFFEE* Drink

First publiquely made and sold in England, by *Pasqua Rosee.*

The Grain or Berry called *Coffee*, groweth upon little Trees, only in the *Deserts of Arabia.*

It is brought from thence, and drunk generally throughout all the Grand Seigniors Dominions.

It is a simple innocent thing, composed into a Drink, by being dryed in an Oven, and ground to Powder, and boiled up with Spring water, and about half a pint of it to be drunk, fasting an hour before, and not Eating an hour after, and to be taken as hot as possibly can be endured; the which will never fetch the skin off the mouth, or raise any Blisters, by reason of that Heat.

The Turks drink at meals and other times, is usually *Water*, and their Dyet consists much of *Fruit*, the *Crudities* whereof are very much corrected by this Drink.

The quality of this Drink is cold and Dry; and though it be a Dryer, yet it neither *heats*, nor *inflames* more then *hot Posset.*

It so closeth the Orifice of the Stomack, and fortifies the heat within, that it's very good to help digestion, and therefore of great use to be taken about 3 or 4 a Clock afternoon, as well as in the morning.

It much quickens the *Spirits*, and makes the Heart *Lightsome.* It is good against sore Eys, and the better if you hold your Head over it, and take in the Steem that way.

It suppresseth Fumes exceedingly, and therefore good against the *Head-ach*, and will very much stop any *Defluxion of Rheums*, that distil from the *Head* upon the *Stomack*, and so prevent and help *Consumptions;* and the *Cough of the Lungs.*

It is excellent to prevent and cure the *Dropsy*, *Gout*, and *Scurvy.*

It is known by experience to be better than any other Drying Drink for *People in years*, or *Children* that have any *running humors* upon them, as the *Kings Evil*, &c.

It is very good to prevent *Mis-carryings* in *Child-bearing Women.*

It is a most excellent Remedy against the *Spleen*, *Hypocondriack Winds*, or the like.

It will prevent *Drowsiness*, and make one fit for business, if one have occasion to *Watch;* and therefore you are not to Drink of it *after Supper*, unless you intend to be watchful, for it will hinder sleep for 3 or 4 hours.

It is observed that in Turkey, where this is generally drunk, that they are not troubled with the Stone, Gout, Dropsie, or Scurvey, and that their Skins are exceedingly cleer and white.

It is neither *Laxative* nor *Restringent.*

Made and sold in St. *Michaels Alley* in *Cornhill*, by Pasqua Rosee, at the Signe of his own Head.

The noteworthy thing about this advertisement is, that in comparison with the best copy of today, it has high merit. For this early advertisement seems to have embodied in it superbly well those qualifications which modern advertising experts agree are essential requirements for success — measured in terms of sales to the consumer. We shall return to it later.

The first newspaper advertisement for coffee appeared in the form of a "reader" in the issue of *The Publick Adviser*, London, for the week of Tuesday, May 19, to Tuesday, May 26, 1657. *The Publick Adviser* was a weekly pamphlet partaking of the nature of a commercial news-letter. The advertisement was sandwiched between a reader advertising a doctor of physick and one for an "artificer," the latter being a ladies' hair-dresser. It was as follows:

In *Bartholomew* Lane on the back side of the Old Exchange, the drink called *Coffee*, (which is a very wholesom and Physical drink, having many excellent vertues, closes the Orifice of the Stomack, fortifies the heat within, helpeth Digestion, quickneth the Spirits, maketh the heart lightsom, is good against Eye-sores, Coughs, or Colds, Rhumes, Consumptions, Head-ach, Dropsie, Gout, Scurvy, Kings Evil, and many others is to be sold both in the morning, and at three of the clock in the afternoon.

About the time that Pascal opened the first coffee house in Paris in 1672, the Paris shopkeepers began to advertise coffee by broadsides. A good example is the following,[1] the text of which closely resembles the original by Pasqua Rosée:

The most excellent Virtue of the Berry called Coffee.

Coffee is a Berry which only grows in the desert of *Arabia*, from whence it is transported into all the Dominions of the Grand Seignior, which being drunk dries up all the cold and moist humours, disperses the wind, fortifies the Liver, eases the dropsie by its purifying quality, 'tis a Sovereign medicine against the itch, and corruptions of the blood, refreshes the heart, and the vital beating thereof, it relieves those

[1] Chamberlaine, John, translation, London, 1685, from Dufour's *Traitez Nouveaux et Curieux du Café, du Thé, et du Chocolat.*

that have pains in their Stomach, and cannot eat; It is good also against the indispositions of the brain, cold, moist, and heavy, the steam which rises out of it is good against the *Rheums* of the eyes, and drumming in the ears: 'Tis excellent also against the shortness of the breath, against *Rheums* which trouble the Liver, and the pains of the Spleen; It is an extraordinary ease against the Worms: After having eat or drunk too much: Nothing is better for those that eat much Fruit.

The daily use hereof in a little while will manifest the aforesaid effect to those, that being indisposed shall use it from time to time.

The following are typical London trade advertisements of 1662 and 1663. The first is from the *Kingdom's Intelligencer* of June 5, 1662, and reads as follows:

At the Exchange Ally from Cornhill into Lumber Street neer the Conduit, at the Musick-Room belonging to the Palsgrave's Hall, is sold by retayle the right coffee powder; likewise that termed the Turkey Berry, well cleansed at 30d. per pound. . . . the East India berry (so called) of the best sorts at 20d. per pound, of which at present in divers places there is very bad, which the ignorant for cheapness do buy, and is the chief cause of the now bad coffee drunk in many plaies (sic.).

The *Intelligencer* for December 21, 1663, contained the following advertisement:

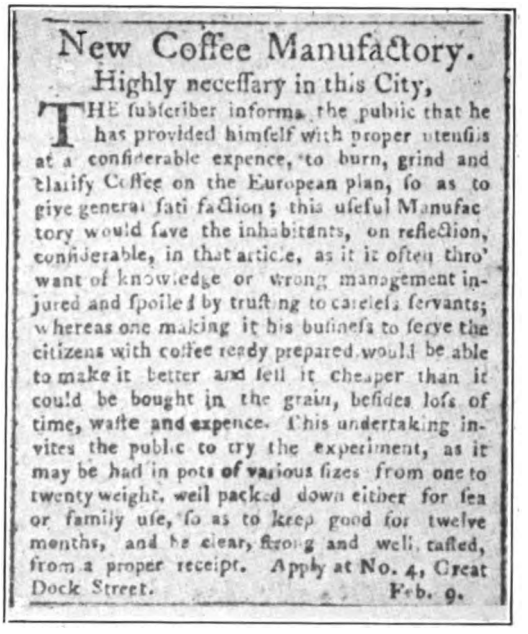
There is a Parcel of Coffee-Berry to be put to publique sale upon Wednesday, the 23. instant, at 6 a clock in the evening at the Globe Coffee-house at the end of St. Bartholomew Lane, over against the North Gate of the Royall Exchange. . . . And if any desire to be further informed they may repair to Mr. Brigg, Publique Notary at the said Globe Coffee-house.

Dufour's treatise on *The Manner of Making Coffee, Tea and Chocolate,* published in Lyons, 1684, was generally regarded as propaganda for the beverage; and, indeed, it proved an excellent advertisement, being quickly translated into English and several other languages.

In 1691 we find advertised in the *Livre Commode* of Paris a portable coffee-making outfit to fit the pocket.

The first coffee periodical, *The New and Curious Coffee House,* was issued at Leipzig by Theophile Georgi in 1707, being a kind of house organ for what was, perhaps, the first kaffee-klatsch; the publisher-proprietor, however, admitted that the idea of making his coffee salon a resort for the literati was obtained from Italy.

In chapter X we have described a number of broadsides, handbills, and pamphlets having to do with the introduction of the coffee drink into London between 1652 and 1675. The advertising student



New Coffee Manufactory.

Highly neceſſary in this City,

THE ſubſcriber informs the public that he has provided himſelf with proper utenſils at a conſiderable expence, to burn, grind and clarify Coffee on the European plan, ſo as to give general ſatisfaction; this uſeful Manufactory would ſave the inhabitants, on reflection, conſiderable, in that article, as it is often thro' want of knowledge or wrong management injured and ſpoiled by truſting to careleſs ſervants; whereas one making it his buſineſs to ſerve the citizens with coffee ready prepared would be able to make it better and ſell it cheaper than it could be bought in the grain, beſides loſs of time, waſte and expence. This undertaking invites the public to try the experiment, as it may be had in pots of various ſizes from one to twenty weight, well packed down either for ſea or family uſe, ſo as to keep good for twelve months, and be clear, ſtrong and well taſted, from a proper receipt. Apply at No. 4, Great Dock Street. Feb. 9.

FIRST NEWSPAPER ADVERTISEMENT SOLELY FOR COFFEE IN THE UNITED STATES
New York Daily Advertiser, February 9, 1790

would do well to refer to them because they serve to show how completely the true merits of the beverage were lost sight of by those who urged its more fantastic claims. It is interesting to note, however, that this early copy was of a high order of typographical excellence; indeed, the display letter used for the word coffee is often like that found in copy in the United States two hundred and fifty years after. Also, it should be noted that "apt 'illustrations's' artful aid" was first employed in 1674. Again, note this curious contrast. Two hundred and sixty-nine years ago all the resources of advertising were being laid under contribution to make propaganda for coffee as the great *cure* for many ailments of which nowadays the enemies of coffee would have us believe coffee is the cause! Those who have possessed themselves of the facts about coffee know that both arguments are equally fantastic.

Coffee was mentioned in shop-keepers' announcements appearing in the *Boston News Letter* as early as 1714, and in other newspapers of the colonies during the eighteenth century, usually being offered for sale at retail with strange companions. In 1748 "tea, coffee, indigo, nutmegs, sugar, etc.," were advertised for sale at a shop in Dock Square, Boston. The follow-

ing advertisement from the *Columbian Centinel*, Boston, April 26, 1794, is typical:

GROCERIES AT NO. 44 *CORNHILL*
Norton and Holyoke

Respectfully inform their friends and the publick, that they have for sale, at their Shop, No. 44 *Cornhill*, formerly the Post-Office.

A GENERAL ASSORTMENT
OF GROCERIES

among which are the following articles:

Teas, Spices, Coffee, Cotton, Indigo, Starch, Chocolate, Raisins, Figs, Almonds, and Olives; West India Rum, best French Brandy, excellent Cherry Wine, pure as imported, etc., etc., all which they will sell as low as any store in Boston.

Any article not liked will be taken again, and the money returned.

It appears that the first advertisement dealing with coffee alone was published in the *New York Daily Advertiser* for February 9, 1790; and this was primarily an advertisement of a wholesale coffee roasting factory rather than an advertisement of coffee per se.

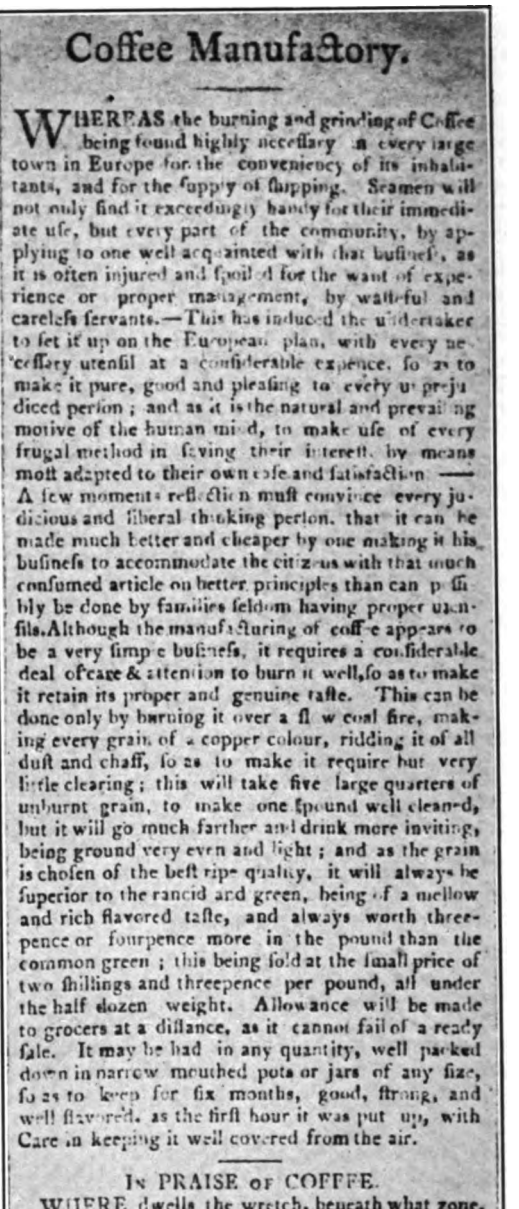
This advertisement, and a later one published in Loudon's *New York Packet* for January 1, 1791, also of a coffee manufactory, are reproduced herewith.

Not until package coffee began to come into vogue in the sixties was there any change in the stereotyped business-card form followed by all dealers in coffee. And even then the monotony was varied only by inserting the brand name, such as "Osborn's Celebrated Prepared Java Coffee. Put up only by Lewis A. Osborn"; "Government coffee in tin foil pound papers put out by Taber & Place's Rubia Mills."

Evolution of Coffee Advertising

Real progress in coffee advertising, as in publicity for other lines of trade and industry, began in the United States. Here too, it has been brought to its lowest degradation and to its highest efficiency. The entire process has taken something less than fifty years.

The first step forward was the picture handbill. The handbill, or dodger, had been common enough in England and on the Continent, where, for upward of two hundred years it had served as an advertising medium, in company with the more robust broadside, and in competition with the pamphlet and newspaper. It remained for America, however, to glorify the handbill by means of colored pictures; and one of the earliest and best specimens of the



Coffee Manufactory.

WHEREAS the burning and grinding of Coffee being found highly neceſſary in every large town in Europe for the conveniency of its inhabitants, and for the ſupply of ſhipping. Seamen will not only find it exceedingly handy for their immediate uſe, but every part of the community, by applying to one well acquainted with that buſineſs, as it is often injured and ſpoil'd for the want of experience or proper management, by waſteful and careleſs ſervants.—This has induced the undertaker to ſet it up on the European plan, with every neceſſary utenſil at a conſiderable expence, ſo as to make it pure, good and pleaſing to every unprejudiced perſon; and as it is the natural and prevailing motive of the human mind, to make uſe of every frugal method in ſaving their intereſt, by means moſt adapted to their own eaſe and ſatisfaction —— A few moments reflection muſt convince every judicious and liberal thinking perſon, that it can be made much better and cheaper by one making it his buſineſs to accommodate the citizens with that much conſumed article on better principles than can poſſibly be done by families ſeldom having proper utenſils. Although the manufacturing of coffee appears to be a very ſimple buſineſs, it requires a conſiderable deal of care & attention to burn it well, ſo as to make it retain its proper and genuine taſte. This can be done only by burning it over a ſlow coal fire, making every grain of a copper colour, ridding it of all duſt and chaff, ſo as to make it require but very little clearing; this will take five large quarters of unburnt grain, to make one pound well cleaned, but it will go much farther and drink more inviting, being ground very even and light; and as the grain is choſen of the beſt ripe quality, it will always be ſuperior to the rancid and green, being of a mellow and rich flavored taſte, and always worth threepence or fourpence more in the pound than the common green; this being ſold at the ſmall price of two ſhillings and threepence per pound, all under the half dozen weight. Allowance will be made to grocers at a diſtance, as it cannot fail of a ready ſale. It may be had in any quantity, well packed down in narrow mouthed pots or jars of any ſize, ſo as to keep for ſix months, good, ſtrong, and well flavored, as the firſt hour it was put up, with Care in keeping it well covered from the air.

IN PRAISE OF COFFEE.

WHERE dwells the wretch, beneath what zone,
To every elegance unknown;
Whoſe ſoul ne'er felt the genial fire,
That COFFEE's ſubtile fumes inſpire.
When thou'rt infus'd with niceſt art,
New life to all thy ſtreams impart,
If Cynthia's hand the taſk aſſumes,
Ambroſia yields to thy perfumes,
Thy fragrant ſcent alone ſhall gain,
Each REBEL to thy gentle REIGN.

☞ This may be always had at the FACTORY (warranted good) at No 232, Queen ſtreet, nearly oppoſite the Governor's.

New York, Dec. 21, 1790. 63

EARLY COFFEE ADVERTISING IN UNITED STATES
Printed in the *New York Packet*, January 1, 1791

IT IS CHEAPER TO BUY
ARBUCKLES'
ROASTED COFFEE
In One Pound Air-Tight Packages,
Than to Buy Green Coffee and Roast it yourself.
WHY?

Because four pounds of ARBUCKLES' ROASTED COFFEE will go as far as five pounds of green Coffee, as Coffee loses one-fifth in roasting by hand. Arbuckles' Roasted Coffee is much better, as every grain is evenly roasted, thus bringing out the full strength and aroma of the Coffee. You cannot roast Coffee properly yourself.

FIRST HANDBILL IN COLORS FOR PACKAGE COFFEE ABOUT 1872

picture handbill is the Arbuckle circular here illustrated.

Soon the handbill copy began to appear in the newspapers, but mostly without the illustrations. Later newspaper developments were to introduce more of the picture element, decorative border, and design. The ideas of European artists were freely drawn upon, but put to so utilitarian uses that their originators would scarce have recognized them.

In the *Ladies Home Journal* for December, 1888, the Great London Tea Company, Boston, an early mail-order house, advertised, "We have made a specialty since 1877 of giving premiums to those who buy tea and coffee in large quantities." In the same issue, there was an advertisement of Seal Brand and Crusade Brand coffee by Chase & Sanborn, Boston. Dilworth Bros., Pittsburgh, were also among the early users of magazine space.

The menace of the cereal coffee-substitute evil had grown to such proportions at the beginning of the twentieth century, that the coffee men began to be concerned about it. Misleading and untruthful "substitute" copy was freely accepted by nearly all media. The package labels were as bad, if not worse. With the advent of the pure food law of 1906, the cereal label abuse was reformed; but not until the "truth in advertising" movement became a power to be reckoned with, nearly ten years later, were the coffee men granted a substantial measure of protection in the magazines and newspapers. Meanwhile, many coffee men, lacking organization and a knowledge of the facts about coffee, unwittingly played into the hands of the substitute-fakers by publishing unfortunate defensive copy which made confusion worse confounded in the consumer's mind.

At one time there were nearly one hundred coffee-substitute concerns engaged in a bitter, untruthful campaign directed

A Mistake Many Women Make

What housewives discovered about roasting coffee

Many years ago, a great many women used to roast their own coffee. They thought it was cheaper to do this. They thought every time they bought the coffee green and roasted it themselves, they saved money for their families.

Most of them found out long ago that this is a great mistake. Instead of being cheaper to roast coffee by hand it actually costs more in the end. This is the reason why.

Why it is wasteful to roast your own coffee

Every time you roast four pounds of coffee you lose a whole pound! One quarter of the weight of the coffee absolutely disappears. Just think how this increases the cost of the coffee you are actually able to use.

If you have ever tasted any coffee that was roasted by hand you know how different it is. Even the best cooks admit they have no luck roasting coffee. Part of the berries are burnt, part are still green, and part have no taste at all. Once in a great while it comes out as it should.

Arbuckles' Coffee is roasted by experts

When you drink Arbuckles' Coffee you taste the difference in a minute. Every grain is evenly roasted. You get just the flavor and strength you want. It is always the same. This is because coffee experts roast it for you, in specially built roasters.

Coffee roasted by hand can never be as good as this. As soon as you taste Arbuckles' Coffee you know why it is the most popular coffee in America.

Three ways to make good coffee

How to make boiled coffee: the way most people make coffee. Be sure that the pot is *clean*. Have your coffee ground *medium fine*, just the size Arbuckles' Ground coffee is. Allow one heaping tablespoonful to each cup of water, with one extra spoonful of coffee for the pot. Put the coffee into the pot, add *cold* water. Let boil until it is just the strength you like. Settle with a dash of cold water.

The drip method, the simplest way: Have your coffee ground very fine, almost to a powder. Use only half a tablespoonful to a cup, with an extra one for the pot. (This method requires only half as much coffee as used for other methods.) Put the coffee in a piece of *clean* cheesecloth, pour boiling water through it slowly—through once only. Be sure to have water boiling. This does not make as strong coffee as boiling—if you want it stronger, don't make it this way—increasing the amount of coffee won't make it any stronger.

Percolator coffee:—the surest method: Use a medium fine ground coffee for percolators, (just the size Arbuckles' Ground coffee is). Allow a tablespoonful to each cup of coffee and one extra; let the water percolate up through the coffee until it is just the right strength. Making coffee this way, you can have it just as mild or strong as you like, and you can rely upon its being good *every* time.

You can make delicious coffee by any of these methods—coffee your husband will be proud of. To get these results the coffee must be right and must always be the same. Arbuckles' Coffee is put up by Arbuckle Bros., the greatest coffee merchants in the world. Get a package today and see why it is used in over a million homes.

Arbuckle Brothers, New York

REVERSE SIDE OF THE ARBUCKLE HANDBILL (IN COLORS) OF 1872

FRANKLIN

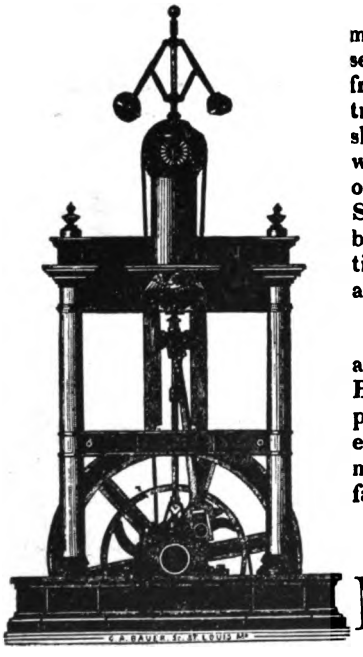
TEA & COFFEE WAREHOUSE,

No. 29 FRANKLIN AVENUE, near 4th St.,

SAINT LOUIS.

ESTABLISHED 1853.

THE FRANKLIN TEA AND COFFEE WAREHOUSE was opened for the supply of Families with those prime necessaries, Tea and Coffee, and each month has witnessed a great accession to the nunber of purchasers. The increasing amount of patronage with which I have been favored, is a satisfactory testimonial to the soundness of the principles upon which the undertaking was founded. Those principles were scrupulous care in selecting those qualities of Tea and Coffee most suitable to family use, an economical system of management, and such moderate charges as can only be guaranteed by a rigid adherence to the system of Cash payments. It may be necessary to remind my friends and the public. that in the Tea department of my business, a very critical judgment, the result of practical experience, is indispensibly necessary in order to ascertain the different qualities.



The same principle is rigidly adhered to in the Coffee department. An equal amount of tact and skill is required in order to secure for the customer a full, rich, mellow, fine flavored Berry, from which alone a good cup of this delicious beverage can be extracted. It is a matter of importance that the Roasting process should be so conducted as to prevent the escape of that volatile oil with which the Berry is impregnated, and to which it principally owes its tonic and other medicinal qualities. My arrangements by Steam-power for roasting and grinding Coffee, cannot be surpassed by any establishment west of New York; and my knowledge practical; I therefore pledge myself no please in all cases, or the packages may be returned.

I am now receiving a large assortment of all the different grades of GREEN AND BLACK TEAS, selected with care from the principal dealers in New York, which I am enabled to sell for Cash at such prices as must give satisfaction to every one who will favor me with a trial.

JAMES FORBES.

NO. 29 FRANKLIN AV.,

NEAR FOURTH STREET, A FEW DOORS WEST OF BROADWAY, WITH STEAM ENGINE AND COFFEE MILLS IN THE WINDOW.

☞Fresh Parched and Ground Coffee always on hand—Warranted.

A ST. LOUIS HANDBILL OF 1854

ARBUCKLES' ARIOSA COFFEE

COSTS MORE AND IS WORTH
MORE THAN OTHER BRANDS OF COFFEE

WHY?

1st. It is made from green coffee of higher grade and better drinking quality; and it is glazed at an actual cost to us of three-eighths of a cent per pound.

2d Its entire strength and aroma are retained by our process of glazing coffee.

3d. The ingredients used in glazing are the choicest eggs, and pure confectioners' "A" sugar; in testimony of this fact, see our affidavit on each package of coffee bearing our name.

4th. The glazing composed of eggs and sugar not only retains the full strength and aroma of our coffee, but gives to it a richness of flavor unknown to other coffees; besides it saves the expense of eggs used in settling unglazed coffee.

BEWARE of buying low-grade package coffee falsely purporting to be made of Mocha, Java and Rio; this being a cheap device, employed by the manufacturers, to deceive unwary consumers.

ARBUCKLE BROS., COFFEE CO.,
NEW YORK.

ADVERTISING-CARD COPY, 1873

against coffee. The most conspicuous offender employed the principle of auto-suggestion and found a goodly number of pseudo-physicians and bright advertising minds that were quite willing to prostitute their finest talents to aid him in attacking an honorable business.

In one year $1,765,000 was spent in traducing the national beverage. The burden of the cereal-faker's song was that coffee was the cause of all the ills that flesh is heir to, and that by stopping its use for ten days and substituting his panacea, these ills would vanish.

Of course, there were many people (but they were the minority) who knew that the caffein content of coffee was a pure, safe stimulant that did not destroy the nerve cells like such false stimulants as alcohol, morphine, etc.); and that while too much could be ingested from abuse of any beverage containing it, nature always effected a cure when the abuse was stopped.

However, there was undoubtedly created in the public mind a suspicion, that threatened to develop into a prejudice, and that affected otherwise sane and normal people, that perhaps coffee was not good for them.

Then came the winter of the coffee men's discontent. Floundering about in a veritable slough of cereal slush, without secure foothold or a true sense of direction, coffee advertising went miserably astray when its writers began to assure the public that *their* brands were guiltless of the crimes charged in the cereal men's indictment. In this, of course, they unwittingly aided and abetted the cereal fakers. For example, one roaster-packer advertised, "The harmful ingredient in coffee is the tannin-bearing chaff, which our roasting and grinding process completely removes."

McLaughlin's XXXX Roasted Coffee

BEST IN THE WORLD

WHY?

BECAUSE a good cup of Coffee is a most important thing.

BECAUSE if you use McLAUGHLIN'S XXXX you will have it every time.

BECAUSE it is made of carefully selected stock by a large and experienced house.

BECAUSE of all the Coffees that grow, those used for McLaughlin's XXXX (a combination of several) gives the finest flavor with fullest strength, at least cost.

BECAUSE by the peculiar manner of roasting, use of patent apparatus steam power, and men skilled in the business, all strength and delicious qualities are perfectly preserved.

BECAUSE with due respect for the old fashioned method of "parching," this, in keeping with the age of improved methods and machinery is better and saves the housekeeper labor, annoyances, difference in shrinkage, as well as an occasional "over-done" panfull.

BECAUSE The glazing on McLAUGHLIN'S Coffee does the settling [saving the cost of eggs]. It is composed of reclarified sugar and corn starch and is perfectly healthful. This glazing also seals the pores of the Coffee and preserves the strength and aroma indefinitely.

BECAUSE Once Tried—Always Wanted.

A HANDSOME PICTURE CARD IN EVERY PACKAGE OF

McLaughlin's XXXX Roasted Coffee

Sold Only in 1 Pound Packages and Under Our Wrapper.

W. F. McLAUGHLIN & CO.,
IMPORTERS AND ROASTERS OF COFFEES,
82, 84, 86, 88, 90 & 92 S. Water St., CHICAGO.

THIS COFFEE IS SOLD BY ALL ENTERPRISING DEALERS.
ASK YOUR GROCER FOR IT.
The Coffee used in McLaughlin's XXXX Package is the same quality that is sold at 10 cts. a pound higher if bought in bulk.

SAVE THE TEN CENTS.

HANDBILL COPY OF THE SEVENTIES

BOX-END STICKER, 1833

Scientific research has since proved the fallacy of this idea.

Another roaster said, "if coffee works havoc with your nerves and digestion, it is because you are not using a fresh roasted, thoroughly cleaned, correctly cured coffee. Our method of preparing gives you the strength and aroma without its nerve-destroying qualities." A well known coffee packer advertised, "Our coffee is free from the dust and bitter tannin — the only injurious property in coffee." Still another packer informed the consumer that "by a very special steel cutting process" he sliced the coffee beans "so that the little cells containing the volatile oil (the food product) are not broken."

A prominent Chicago packer put out a new brand of coffee which he claimed was "non-intoxicating," "poisonless," and the "only pure coffee." A New Yorker, not to be out-done, brought out a coffee that he said contained all the stimulative properties of the original coffee berries, but with every trace of acid removed, every undesirable element eliminated. "Also," he added for good measure, "this coffee may be used freely without harming the digestive organs or impairing the nervous system."

And one package-coffee man became so exercised over cereal competition that he brought out a *grain* "coffee" of his own, which he actually advertised as "the nearest approach to coffee ever put on the market, having all the merits without any objectionable features, strengthening without stimulating, satisfying without shattering the nerves."

And so history again repeated itself in America. Five hundred years after the first religious persecution of the drink in Arabia, we find it being persecuted by commercial zealots in the United States. And even in the house of its friends, coffee was being stabbed in the back. The coffee merchants themselves presented the spectacle of "knocking" it by inference and innuendo.

Something had to be done. As cereal drinks, standing on their own feet, the coffee "substitutes" would have attracted little notice. It was only by trading on the allegation that they were *substitutes for coffee* that they made any headway. The original offender sold his product as "coffee," which was an untruth, as he later admitted there was not a bean of coffee in it. He boldly advertised: "Blank coffee for persons who can't digest ordinary coffee."

When it became no longer possible to perpetrate an untruth on the package label, there still remained the newspapers and billboards. For years before fake-advertising laws and an outraged public opinion made recourse to these no longer possible, it was a common practise to use the newspapers and billboards to promote the idea that here was a different coffee; and in this way to create a demand for a package, which, when purchased, was found to tell a different story.

As late as 1911, one of our most respected New York dailies was carrying an advertisement calling the product "coffee," al-

·FOOD·PRODUCTS·
ONE OF A SERIES OF PICTURES REPRESENTING COFFEE CULTURE. WATCH FOR THE NEXT.
SCENE ON A COFFEE PLANTATION
CHASE & SANBORN
OUR COFFEES HAVE A NATIONAL REPUTATION REPRESENTING THE FINEST GROWN.
SEAL BRAND COFFEE
CRUSADE BLEND
TEST FREE
CHASE & SANBORN, 91 BROAD ST., BOSTON, MASS.

A CHASE & SANBORN ADVERTISEMENT, 1888
As printed in *Harper's* and *Scribner's Magazines*

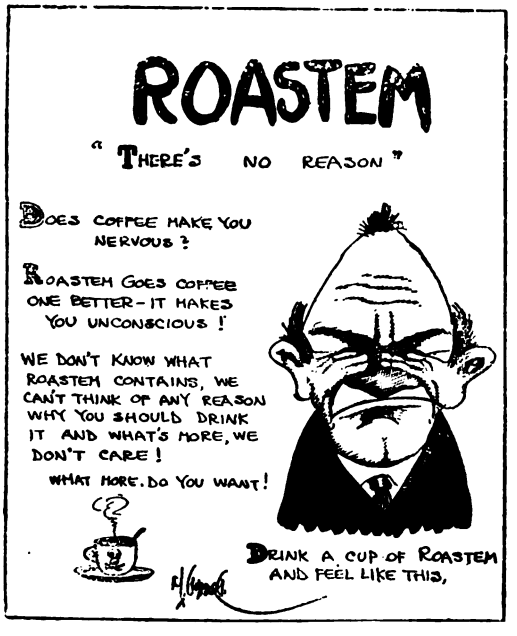
though fairness demands it be recorded that the coffee part of the announcement was stricken out when *The Tea and Coffee Trade Journal* called the attention of the publisher to its misleading character. This trade paper, from its start, had been urging the coffee men to organize for defense. The agitation bore fruit at last, first in the starting of the National Coffee Roasters Association, and later in the inception of the movement that resulted in the international advertising campaign for coffee now in progress in the United States.

Meanwhile, the cereal coffee-substitute had been thoroughly discredited by governmental analysis, although even today newspaper publishers are to be found here and there who are willing to "take a chance" with public opinion and who will admit to their advertising columns such misleading statements for the substitute, as "it has a coffee-like flavor."

In the United States today, coffee advertising has reached a high plane of copy excellence. Our coffee advertisers lead all nations. The educational work started by *The Tea and Coffee Trade Journal,* fostered by the National Coffee Roasters Association, and developed by the Joint Coffee Trade Publicity Committee, has laid low many of the bugaboos raised by the cereal sinners. The coffee men, however, have left considerable room for improvement. There are still some who are given to making exaggerated claims in their publicity, who make reflections upon competitors in a way to destroy public confidence in coffee, and who display an ignorance of, or a lack of confidence in, their product by continuing to claim that their brands do not contain what they assert are injurious or worthless constituents. It is to be hoped that in time these abuses will yield to the further enlightening influence of the trade press, and of the organizations that are continually working for trade betterment.

HENRY WARD BEECHER
never appeared at his best unless fortified with a cup of good coffee. His lecture manager gives an amusing account of their ingenious efforts to get good coffee for the great preacher just before each lecture, and states that there was a marked difference between Mr. Beecher's lectures with coffee, and those without.
It is easy to get the best, by simply ordering the famous
Chase & Sanborn's Coffees.

NEWSPAPER COPY USED BY CHASE AND SANBORN ABOUT 1900


ROASTEM
"THERE'S NO REASON"
DOES COFFEE MAKE YOU NERVOUS?
ROASTEM GOES COFFEE ONE BETTER - IT MAKES YOU UNCONSCIOUS!
WE DON'T KNOW WHAT ROASTEM CONTAINS, WE CAN'T THINK OF ANY REASON WHY YOU SHOULD DRINK IT AND WHAT'S MORE, WE DON'T CARE!
WHAT MORE DO YOU WANT!
DRINK A CUP OF ROASTEM AND FEEL LIKE THIS.

A GOLDBERG CARTOON, 1910

Before the international coffee campaign started in 1919, the National Coffee Roasters Association promoted two national coffee weeks, one in 1914 and another in 1915, wherein excellent groundwork was done for the big joint coffee trade propaganda that followed. Some original research also was done along lines of proper grinding and correct coffee brewing. A better-coffee-making committee, under the direction of Edward Aborn of New York, rendered yeoman's service to the cause. Much educational work was done in schools and colleges, among newspaper editors, and in the trade. This campaign was the first co-operative publicity for coffee. Among other things, it put a nation-wide emphasis on iced coffee as a delectable summer drink and, for the first time, stressed the correct making of the beverage by drip and filtra-

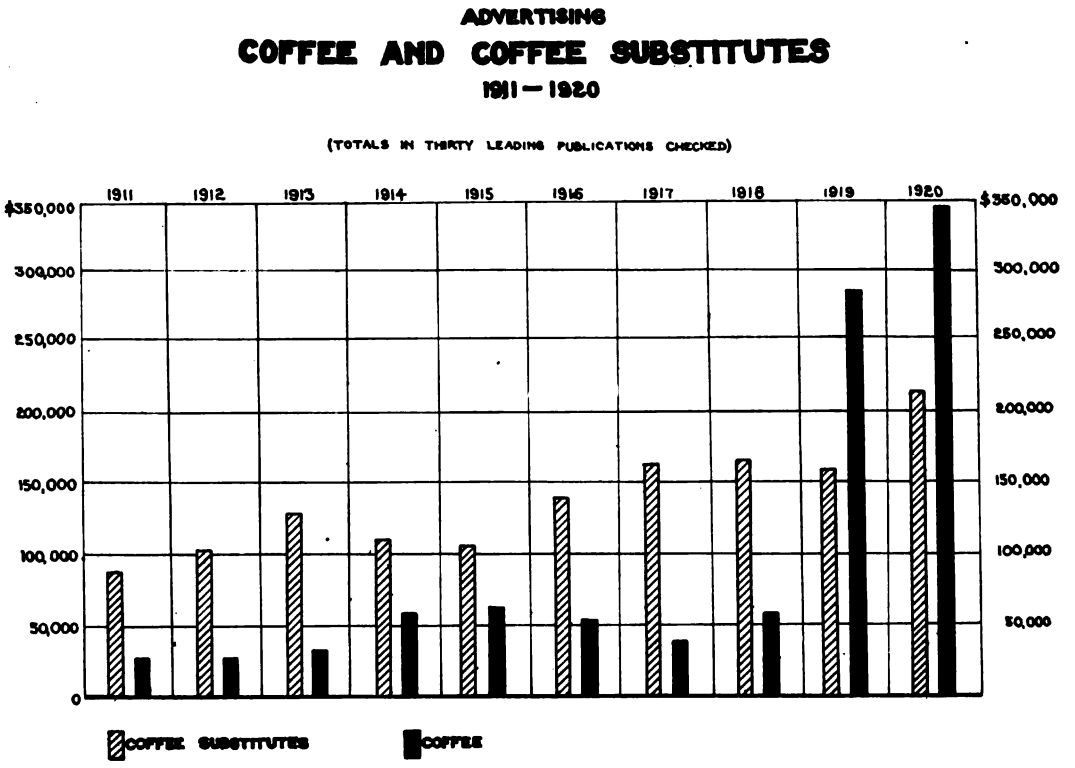


CHART SHOWING MONEY SPENT ON ADVERTISING COFFEE AND SUBSTITUTES
Only advertisements printed in magazines and periodicals are considered in making this calculation

tion methods instead of by boiling, which had long been one of the most crying evils of the business.

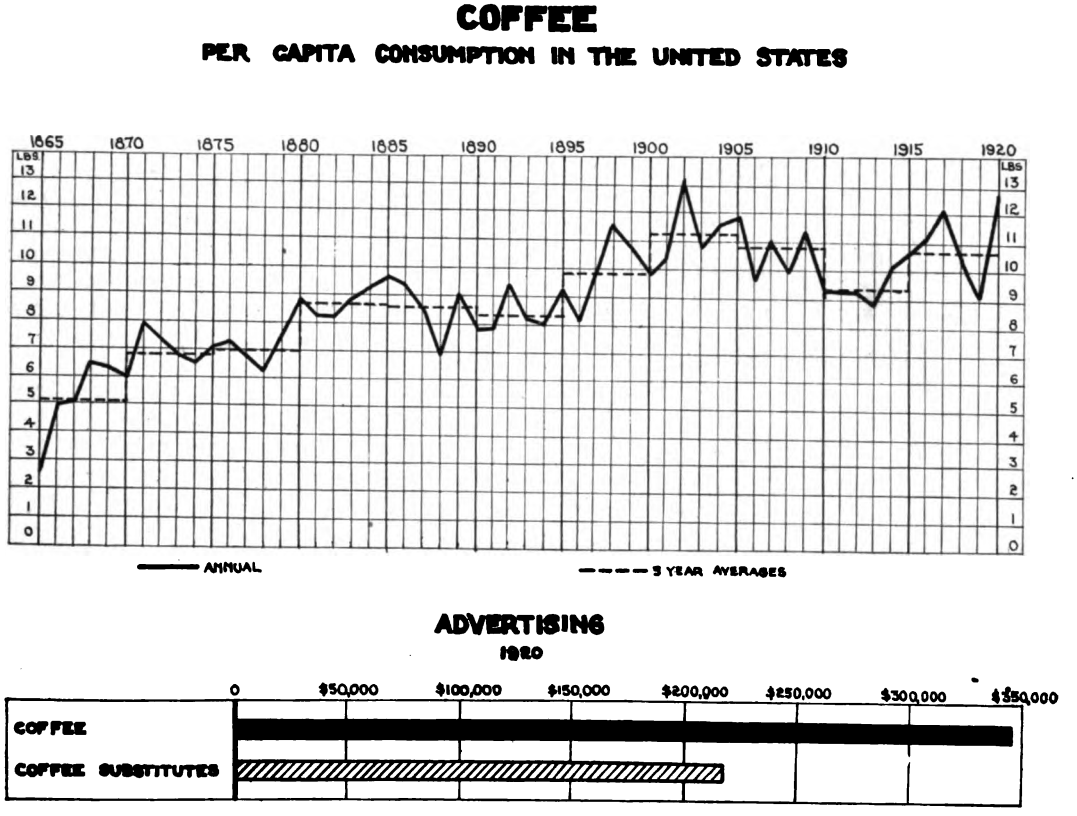
Package Coffee Advertising

Coffee advertising began to take on a distinctive character with the introduction of Ariosa by John Arbuckle in 1873. Some of the early publicity for this pioneer package coffee appears typographically crude, judged by modern standards; but the copy itself has all the needful punch, and many of the arguments are just as applicable today as they were a half-century ago. Take the handbill copy illustrated. It was done in three colors, and the argument was new and most convincing. The reverse side copy is also extremely effective. Note the expert-roaster argument and coffee-making directions; some of these may still be found in current coffee advertising.

Most of the original Arbuckle advertising was by means of circulars or broadsides, although some newspaper space was employed. Premiums were first used by John Arbuckle as an advertising sales adjunct, and they proved a big factor in putting Ariosa on the map. Mr. Arbuckle created the kind of word-of-mouth publicity for his goods that is the most difficult achievement in the business of advertising. It caused so deep and lasting an impression, that in some sections it has persisted through at least five decades. The advertising moral is: Get people to *talk* your brand.

Since the death of its founder, the Arbuckle copy has been changed to fit modern conditions. That it has kept pace with all the forward movements in business and advertising is evident from the specimens which help to illustrate this chapter. A significant change is to be noted in the fact that, for the first time in its history, "the greatest coffee business in the world" has adopted a policy of advertising to the trade as well as to the consumer, thus giving its publicity a well rounded character which it formerly lacked.

The evolution of other notable package coffees is also shown by illustration. Several concerns blazed new trails that have since been picked up and followed by competing brands.



CHARTS SHOWING PER CAPITA CONSUMPTION AND COFFEE AND SUBSTITUTE ADVERTISING

Among the many long-established advertised package-coffee successes may be mentioned:

Arbuckle's Yuban and Ariosa; McLaughlin's XXXX; Chase & Sanborn's Seal Brand; Dwinell-Wright's White House; Weir's Red Ribbon; B. Fischer & Company's Hotel Astor; Brownell & Field's Autocrat; Bour's Old Master; Scull's Boscul; Seeman Brothers' White Rose; Blanke's Faust; Baker's Barrington Hall; Woolson Spice Company's Golden Sun; International Coffee Company's Old Homestead; Kroneberger's Old Reserve; Western Grocer Company's Chocolate Cream; Leggett's Nabob; Clossett & Dever's Golden West; R. C. Williams' Royal Scarlet; Merchants Coffee Company's Alameda; Widlar Company's C. W. brand; Meyer Bros.' Old Judge; Nash-Smith Tea and Coffee Company's Wedding Breakfast; J. A. Folger & Company's Golden Gate; Ennis Hanley Blackburn Coffee Company's Golden Wedding; M. J. Brandenstein & Company's M. J. B.; Hills Brothers' Red Can, the Young & Griffin Coffee Company's Franco-American, and the Cheek-Neal Coffee Company's Maxwell House.

It was estimated that the amount of money spent by the larger coffee roasters upon all forms of publicity in the United States in 1920 was about $3,000,000.

Charts prepared by Charles Coolidge Parlin of the division of commercial research of the Curtis Publishing Company, and checked by the Publishers' Information Bureau, show the advertising for coffee and for coffee substitutes in thirty leading publications from 1911 to 1920; and compare the advertising for coffee and coffee substitutes in 1920 with a chart of per capita consumption. It should be noted that the figures exclude all other forms of advertising, such as newspapers. bill-posting, street-car signs, electric signs, and so forth.

Experience has proven that a package coffee, to be successful, must have back of it expert knowledge on buying, blending, roasting, and packing, as well as an efficient sales force. These things are essential: (1) a quality product; (2) a good

AN EFFECTIVE CUT-OUT

trade-mark name and label; (3) an efficient package. With these, an intelligently planned and carefully executed advertising and sales campaign will spell success. Such a campaign comprehends advertising directed to the dealer and to the consumer. It may include all the approved forms of publicity, such as newspapers, magazines, billboards, electric signs, motion pictures, demonstrations, and samples. One phase of trade advertising which should not be overlooked is dealer helps. The extent to which the roaster-packer, or the promoter of a new package coffee, should utilize the various advertising media or go into dealer helps must, of course, depend upon the size of the advertising appropriation.

Many roaster-packers supply grocers handling their coffee with dealer helps in the shape of weather-proof metal signs for outside display, display racks, store and window display signs, cut-outs, blotters, consumer booklets, newspaper electros, stereopticon slides, moving pictures, demonstrations, samples, etc. Dealer selling schemes based on points have also been found helpful in promoting sales.

Advertising to the Trade

Until a comparatively recent date, the green coffee importer, selling the roasting trade, has not realized the need of advertising. He has inclined to the belief that he did not need to advertise, because, in most instances, green coffee is not sold by the mark; and, to a certain extent, price has been the determining factor.

During late years, however, many green coffee firms have come to realize that there is a good-will element that enters into the equation which can be fostered by the intelligent use of advertising space in the coffee roaster's trade journal. Also, a few importers are now featuring trade marks in their advertising, thus building up a tangible trade-mark asset in addition to good will.

For a number of years the green coffee trade used the business card type of advertisement; but some are now utilizing a more up-to-date style of copy, as typified by the advertisements of Leon Israel & Brothers and W. R. Grace & Company. Specimens of other green coffee advertising of the better kind are here reproduced.

Advertising campaigns in behalf of package coffees can not be fully effective without the proper use of trade publications. Advertising in the dealer's paper has many advantages. It is good missionary work for the salesman. It creates confidence in the mind of the dealer. It is an excellent means for demonstrating to the retailer that he is being considered in the scheme of distribution — that no attempt is being made to force the goods upon him through consumer advertising alone. Trade-paper advertising also offers the packer the opportunity to acquaint the dealer with the selling points in favor of the brand advertised, thus saving the time of the salesman. An increasing number of coffee packers are now using the advertising columns of trade papers, and some typical advertisements are reproduced herewith.

Advertising by Various Mediums

Billboard and other outdoor advertising, also car cards, are being used to a considerable extent for coffee publicity. Painted outdoor signs have been the back-

bone of one middle-west roaster's campaign for a number of years. Both car cards and billboards are growing in popularity because they enable the coffee packer to reproduce his package in its natural colors and permit also of striking displays. Such firms as Arbuckle Brothers, New York; Dayton Spice Mills, Dayton, Ohio; W. F. McLaughlin & Company, Chicago; the Puhl-Webb Company, Chicago; the Bour Company, Toledo; B. Fischer & Company, New York; and the Cheek-Neal Coffee Company, Nashville and New York, are consistent users of this character of advertising. Electric signs also have proved effective for coffee advertising. Reproductions of some characteristic outdoor and car-card advertisements are to be found in these pages.

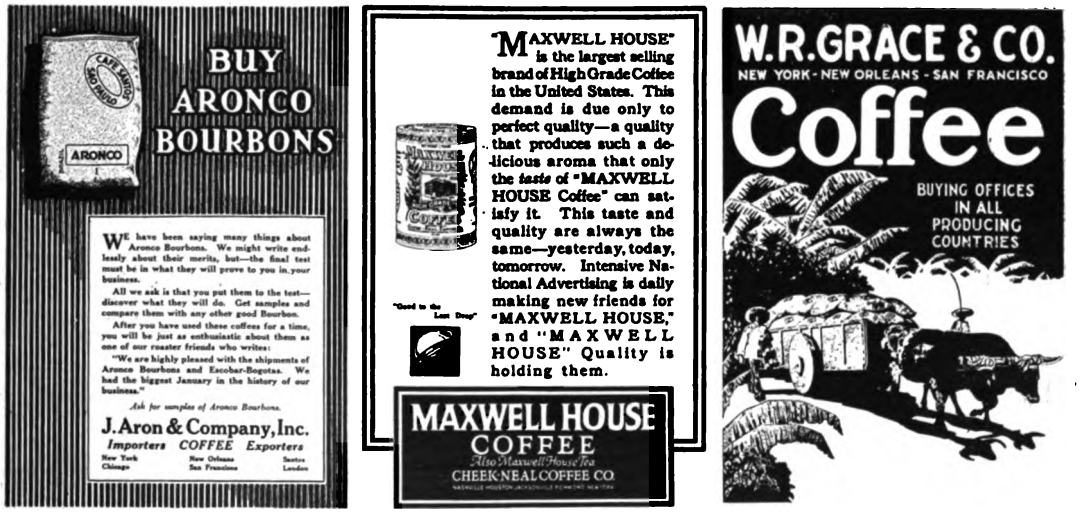
Motion pictures are a comparatively new development in coffee advertising. One of the first coffee roasters to adopt this plan of publicity was S. H. Holstad & Company, Minneapolis. The film used depicted the cultivation and preparation of coffee for the market, also the complete roasting and packaging operations. The A. J. Deer Company, manufacturers of coffee mills and roasters, Hornell, N. Y., was another pioneer in the use of coffee films. Jabez Burns & Sons, coffee-machinery manufacturers, followed with an educational coffee picture. The National Packaging Machinery Company, of Boston, is another concern that has utilized films for advertising purposes, showing its machines in operation in a coffee-packing plant. Many roasters made use of the coffee film produced by the Joint Coffee Trade Publicity Committee.

In using advertising films, it is customary for the roaster to arrange for a showing at one or more theaters. The advertising in the local papers features the coffee brands, also the name of the local dealer, the latter being furnished with tickets which he distributes among his retail customers. There are several concerns making a business of supplying commercial films and of getting distribution for them.

Another form of theater publicity is that of the advertising slide — stereopticon views thrown upon the screen between feature pictures. Many packers find these are effective for cultivating the dealer, it being customary to show the brand name, together with that of the local distributer.

Advertising for Retailers

When retailers analyze the people to whom they sell coffee, they usually find three types. First, there is the woman who thinks she is an expert judge of coffee, but who is unable to find anything to suit her cultivated taste. Then there is the new housewife, possibly a bride of a few months, who knows very little about coffee, but wants to find a good blend that both she and her husband will like. The third is the most acceptable class, the satisfied people who have found coffee that delights them, day after day.


BUY
ARONCO
BOURBONS
ARONCO
WE have been saying many things about Aronco Bourbons. We might write endlessly about their merits, but—the final test must be in what they will prove to you in your business.
All we ask is that you put them to the test—discover what they will do. Get samples and compare them with any other good Bourbon.
After you have used these coffees for a time, you will be just as enthusiastic about them as one of our roaster friends who writes:
"We are highly pleased with the shipments of Aronco Bourbons and Escobar-Bogotas. We had the biggest January in the history of our business."
Ask for samples of Aronco Bourbons.
J. Aron & Company, Inc.
Importers COFFEE Exporters
New York Boston
Chicago San Francisco London
"MAXWELL HOUSE" is the largest selling brand of High Grade Coffee in the United States. This demand is due only to perfect quality—a quality that produces such a delicious aroma that only the taste of "MAXWELL HOUSE Coffee" can satisfy it. This taste and quality are always the same—yesterday, today, tomorrow. Intensive National Advertising is daily making new friends for "MAXWELL HOUSE," and "MAXWELL HOUSE" Quality is holding them.
"Good to the Last Drop"
MAXWELL HOUSE
COFFEE
Also Maxwell House Tea
CHEEK-NEAL COFFEE CO.
W.R.GRACE & CO.
NEW YORK - NEW ORLEANS - SAN FRANCISCO
Coffee
BUYING OFFICES IN ALL PRODUCING COUNTRIES

How Coffee is Advertised to the Trade

Left to right, good examples of green coffee publicity — center, well-arranged package-coffee copy

W. Harry Longe, a Texas retailer, has prepared the following "ready made" copy appeals for the three classes. To "Mrs. Know-it-all-about-Coffee," this style has been found effective:

IMPROVE THE COFFEE AND YOU IMPROVE THE MEAL

The corner of the table that holds the coffee urn is the balancing point of your dinner. If the coffee is a "little off" for some reason or other—probably it's the coffee's own fault—things don't seem as good as they might; but when it is "up to taste" the meal is a pleasure from start to finish. If the "balancing point" is giving you trouble, let ANY BLEND Coffee properly regulate it for you. 35 cents, three pounds for $1.

ANY TEA & COFFEE COMPANY

For the good lady who is anxious to find a suitable blend of coffee, and who desires information, this is a good appeal:

A SUCCESSFUL SELECTION

Of the coffee that goes into the every-morning cup will arrive on the day when ANY BLEND is first purchased. Many homes have been without such a success now for a long time, but, of course, they didn't know of ANY BLEND—and even now it is hard to really know ANY BLEND till you try it. That is why we seem to insist that you ask for an introduction by ordering a pound.

ANY BLEND TEA & COFFEE COMPANY

Taking both classes and dealing with them alike:

"BLENDED TO BALANCE"

Is a good descriptive phrase of ANY BLEND coffee, for care is taken in the preparation that the strength does not overpower the flavor. The aim of the blender is to get an acceptable and delightful drinking quality. He has been more than successful, as you will see when you try ANY BLEND. 35 cents, three pounds for $1.

ANY TEA & COFFEE COMPANY

The satisfied class, of course, is not averse to making a change, and it is well, occasionally, for the dealer to let his own satisfied customers know he still believes in his goods. The argument might take this form:

A SERVICE THAT SAVES

Is the serving of ANY BLEND, when coffee is desired. ANY BLEND saves many things. It saves worry, for it is always uniform in flavor and strength. It saves time, for when you order ANY BLEND we grind it just as fine or just as coarse as your percolator or pot demands. ANY BLEND also saves expense, because there is no waste, as you know just how much to use, every time, to make a certain number of cups. 35 cents, three pounds for $1.

ANY TEA & COFFEE COMPANY

Again, possible new customers may listen to this appeal:

TO PROVE YOUR APPROVAL

Of ANY BLEND coffee, you are asked to try just one pound. We know you will like it, for it is blended and roasted and ground as an exceptional coffee should be, with the care that a good coffee demands. Prove to yourself that you approve of this method of preparing coffee. 35 cents, three pounds for $1.

ANY TEA & COFFEE COMPANY

In some households the cook is permitted to do the ordering, and usually the cook does not read the daily papers with an eye for coffee ads. To reach this individual through her mistress:

CAN YOU NAME YOUR COFFEE?

Or is it one of those many unknown brands that comes from the store at the order of your cook? Let the cook do the ordering, for you are lucky if you have one you can rely upon, but tell her you prefer ANY BLEND to the No-Name Blend you may now be using. ANY BLEND has one distinct advantage over all others; it is freshly roasted. Tell the kitchen-lady, now, to order ANY BLEND.

ANY TEA & COFFEE COMPANY

Advertising by Government Propaganda

Advertising coffee by government propaganda has been indulged in with more or less success by the British government in behalf of certain of its colonial possessions; by the French and the Dutch; by Porto Rico, Costa Rica, Guatemala, and Brazil. The markets most cultivated have been Italy, France, England, Russia, Japan, and the United States.

Great Britain began the development of coffee cultivation in its colonies in 1730. Parliament first reduced the inland duties. In many ways it has since sought to encourage British-grown coffee, building up a favoritism for it that is still reflected in Mincing Lane quotations. The Netherlands government did the same thing for Java and Sumatra; and France rendered a similar service to her own colonies.

Since Porto Rico became a part of the United States, several attempts have been made by the island government and the planters to popularize Porto Rico coffee in the United States. Scott Truxtun opened a government agency in New York in 1905. Acting upon the counsel and advice of the author, he prosecuted for several years a vigorous campaign in behalf of the Porto

Rico Planters' Protective Association. The method followed for coffee was to appoint official brokers, and to certify the genuineness of the product. Owing to insufficient funds and the number of different products for which publicity was sought, the coffee campaign was only moderately successful.

Mortimer Remington, formerly with the J. Walter Thompson Company, a New York advertising agency, was appointed in 1912 commercial agent for the Porto Rico Association, composed of island producers and merchants. Some effective advertising in behalf of Porto Rico coffee was done in the metropolitan district, where a number of high-class grocers were prevailed upon to stock the product, which was packed under seal of the association. As before, however, the other products handled — including cigars, grape-fruit, pineapples, etc. — handicapped the work on coffee, and the enterprise was abandoned. Subsequent efforts by the Washington government to assist the Porto Ricans in evolving a practical plan to extend their coffee market in the United States came to naught because of too much "politics."

Beginning with the Panama-Pacific Exposition in San Francisco in 1915, the government of Guatemala started a propaganda for its coffee in the United States; as the European market, which had up till then absorbed seventy-five percent of its product, was closed to it, owing to the World War. E. H. O'Brien, a coffee broker of San Francisco, directed the publicity. Some full pages were used in newspapers, but the main efforts were directed at the coffee-roasting trade. The campaign, so far as it went, was highly successful.

Costa Rica also gave special encouragement to coffee-trade interests that offered to expand the United States market for Costa Rica coffee during the World War.

For many years Colombia has been talking of making propaganda here for its coffee, but thus far nothing of a constructive character has been done.

São Paulo began in 1908 to make propaganda for its coffee by subsidizing companies and individuals in consuming countries to promote consumption of the Brazil product. A contract was entered into between the state of São Paulo and the coffee firms of E. Johnston & Company and Joseph Travers & Son, of London, to exploit Brazil coffee in the United Kingdom. Similar contracts were made with coffee firms in other European countries, notably in Italy and France. The subsidies were for five years and took the form of cash and coffee. The English company was known as the "State of São Paulo (Brazil) Pure Coffee Company, Ltd." Fifty thousand pounds sterling was granted this enterprise, which roasted and packed a brand known as "Fazenda;" promoted demonstrations at grocers' expositions; and advertised in somewhat limited fashion. The general effect upon the consumption of coffee in England was negligible, however, although at one time some five thousand grocers were said to have stocked the Fazenda brand. A feature of this propaganda was the use of the Tricolator (an American device since better known in the United States) to insure correct making of the beverage. Brazil also made propaganda for its coffee in Japan, in 1915, as part of certain undertakings involving the immigration of Japanese laborers to Brazil.

The Comité Français du Café was formed in Paris in July, 1921, to co-operate with Brazil in an enterprise designed to increase the consumption of coffee in France.

The chief fault in most of the coffee propagandas here and abroad has been the doubtful practise of subsidizing particular coffee concerns instead of spending the funds in a manner designed to distribute the benefits among the trade as a whole. This mistake, and local politics in the producing countries, have made for ultimate failure. A notable exception is the latest propaganda for Brazil coffee in the United States, where all the various interests, the the São Paulo government, the growers, exporters, importers, roasters, jobbers, and dealers, have co-operated in a plan of campaign to advertise coffee *per se*, and not to secure special privilege to any individual, house, or group.

Joint Coffee Trade Publicity Campaign

Twenty years ago the author began an agitation for co-operative advertising by the coffee trade. He suggested as a slogan, "Tell the truth about coffee;" and it is gratifying to find that many of his original ideas have been embodied in the present joint coffee trade publicity campaign, now in its fourth year.

THEODORE LANGGAARD DE MENEZES

The coffee roasters at first were slow to respond to the co-operative advertising suggestion, because in those days competition was more unenlightened than now, and therefore more ruthless. It needed organization to bring the trade to a better understanding of the benefits certain to be shared by all when their individual interests were pooled in a common cause. Leaders of the best thought in the trade, however, were quick to realize that only by united effort was it possible to achieve real progress; and when it was suggested that the first step was to organize the roasting trade, the idea took so firm a hold that it only needed some one to start it to bring together in one combination the keenest minds in the business.

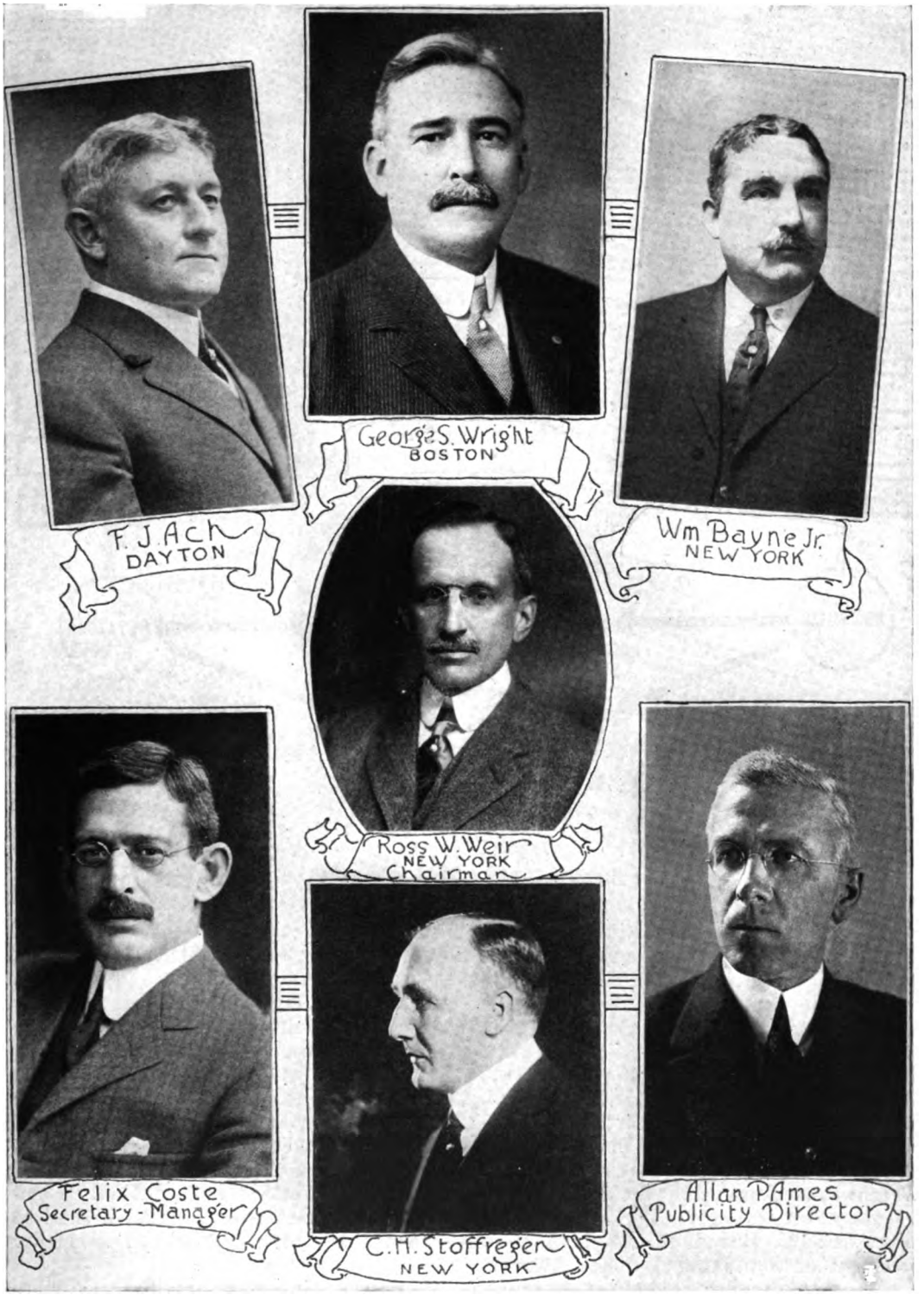
The coffee roasters organized their national association in 1911. The author of this work urged that co-operative advertising based upon scientific research should be done by the roasters themselves independently of the growers; but it was found impracticable to unite diverging interests on such an issue, and so the leaders of the movement bent all their energies toward promoting a campaign that would be backed jointly by growers and distributers, since both would receive equal benefit from any resulting increase in consumption. Brazil, the source of nearly three-quarters of the world's coffee, was the logical ally; and an appeal was made to the planters of that country. A party of ten leading United States roasters and importers visited Brazil in 1912 at the invitation of the federal government.

In Brazil, as in the United States, progress resulted from organization. The planters of the state of São Paulo, who produce more than one-half of all coffee used in the United States, were the first to appreciate the propaganda idea. After their attempts to interest the national government failed, the São Paulo coffee men founded the *Sociedade Promotora da Defesa do Cafe* (Society to Promote the Defense of Coffee), and persuaded their state legislature to pass a law taxing every bag of coffee shipped from the plantations of that state in a period of four years. This tax, amounting to one hundred reis per bag of 132 pounds, or about two and one-half cents United States money at even exchange rates, is collected by the railroads from the shippers, and turned over to the *Sociedade*.

The Brazilian Society sent to the United States a special envoy, Theodore Langgaard de Menezes, to conclude arrangements; and on March 4, 1918, in New York, the pact was signed whereby São Paulo was to contribute to the publicity campaign in the United States approximately $960,000 at the rate of $240,000 a year for four years; and the members of the trade in the United States were to contribute altogether $150,000[2]. The success of the negotiations was due to the skilful management of Ross W. Weir in the United States, and to the superior salesmanship of Louis R. Gray, the Arbuckle representative in Brazil.

Supervision of the advertising in the United States was delegated to five men,

[2] The agreement with the São Paulo planters comprehended their furnishing yearly the proceeds of a tax of 100 reis per bag. This actually amounted to $20,000 per month up to January, 1921. During 1921, by reason of a short crop and the advance rate of exchange, the remittances were reduced almost half. In January, 1922, the São Paulo legislature on petition of the *Sociedade* increased the tax to 200 reis per bag to run for 3 years. In spite of this, the probability is that another short crop and a continued low rate of exchange will keep the Brazil contribution in 1922 down to about $180,000 net. By November, 1921, a total of $671,000 was expended on advertising. Of this, $551,000 was contributed by the planters of São Paulo, and $120,000 by the coffee trade of the United States.



JOINT COFFEE TRADE PUBLICITY COMMITTEE IN UNITED STATES

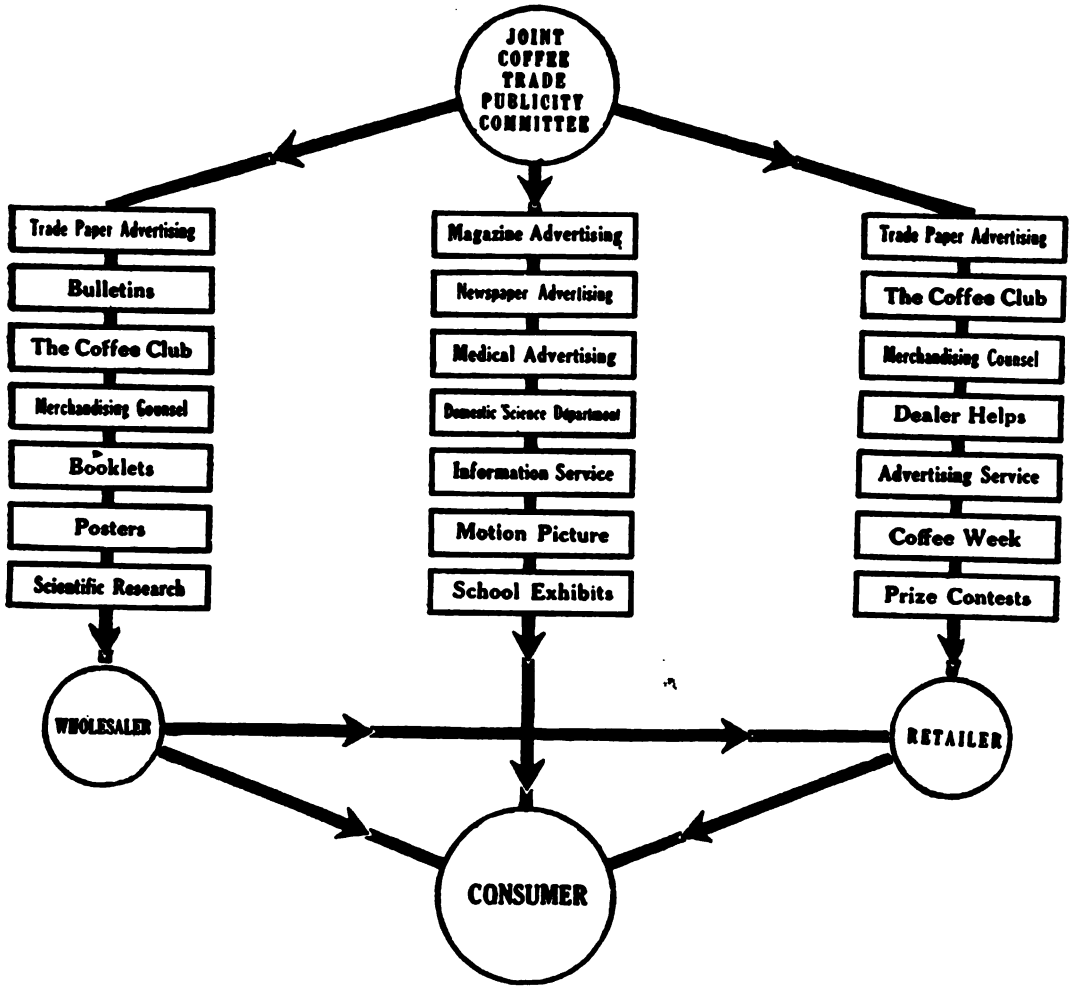


CHART SHOWING PLAN OF ADVERTISING CAMPAIGN

representing both the importing and roasting branches of the trade, and designated as the Joint Coffee Trade Publicity Committee of the United States. Three of these committeemen, Ross W. Weir, of New York; F. J. Ach, of Dayton, Ohio; and George S. Wright, of Boston, are roasters; and two, William Bayne, Jr., and C. H. Stoffregen, both of New York, are importers and jobbers, or green-coffee men. The committee organized with Mr. Weir as chairman, Mr. Wright as treasurer, and Mr. Stoffregen as secretary. At the invitation of the committee, C. W. Brand of Cleveland, then president of the National Coffee Roasters Association, attended committee meetings, and assisted in determining the policies of the campaign. Headquarters were established at 74 Wall Street, in the heart of the New York coffee district, with Felix Coste as secretary-manager, and Allan P. Ames as publicity director. N. W. Ayer & Son, advertising agents of Philadelphia, who had engineered the plan of campaign from the start of the movement in the National Coffee Roasters Association, handle the advertising account.

São Paulo's contribution to the advertising fund is sent in monthly instalments to the Joint Coffee Trade Publicity Committee under an agreement that it shall be expended only for magazine and newspaper space.

Supplementing this Brazilian contribution, is the fund raised by voluntary subscriptions from the coffee trade of the

On bended knees the black slaves served COFFEE
He saved the last COFFEE plant-
The glory of Cornhill's Alley— COFFEE
"The sovereign drink of pleasure and of health" COFFEE
"The drink of intellectuals" COFFEE
The COFFEE House is coming back
Café-Cawfee COFFEE
Eight bells in the mid-watch- COFFEE for the wheel & lookouts
Your Uncle Sam provided his boys with COFFEE

JOINT-COMMITTEE MAGAZINE AND NEWSPAPER COPY, 1919

Wild and weird were our old delusions

We know the truth about

COFFEE

WE marvel at our old superstitions. It is hard to believe now that more than 30,000 women have been condemned as *witches!*

Frenzy and prejudice mark the development of progress in many directions. Even coffee—the most popular and beneficial of all beverages,—has not wholly escaped.

Despite the fact that food faddists and temperamental extremists have assailed coffee, it has become the *universal* drink of this great level-headed nation.

There can be no question about the soothing, nourishing, invigorating effects of good, pure coffee. It lightens fatigue, sustains energy and aids digestion.

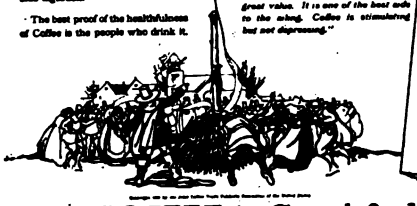
The best proof of the healthfulness of Coffee is the people who drink it.

Sao Paulo, Brazil, in the greatest coffee-growing district in the world, is one of the healthiest and most progressive cities in South America.

Coffee will ever remain the preferred drink of normal minded, healthy bodied people everywhere. Be sure you drink *genuine* coffee. Its flavor cannot be *imitated.*

Coffee is man's drink,—woman's drink,—the cheer and solace of all who enjoy the good things of life. Good coffee in moderation must be beneficial to any normal person. Drink it—for your *health's* sake.

SIGNIFICANT—"*The American Housekeeper*" says:—"*Coffee is of great value. It is one of the best aids to the whole. Coffee is stimulating but not depressing.*"



GOOD COFFEE *is* Good for You!

There have been many popular false alarms *but~*

of course

COFFEE

is wholesome

Time was when many good people were affrighted by an eclipse of the sun. They thought it meant the end of the world! Of course, we all know *differently now.*

Coffee has been in use for ten centuries. And it has never been eclipsed in popular favor. But even as the sun, coffee has been subject to many false *alarms.*

Just as nervous people start at a sudden sound, there are some similarly affected who believe that coffee isn't "good" for them.

Millions of healthy, strong, normal people drink coffee in moderation. They find it soothing, comforting, sustaining, nourishing—and *healthful.*

The growing, roasting and marketing of coffee is one of the world's greatest industries. From Brazil alone we import between 800,000,000 and 900,000,000 pounds a year.

Naturally, there has arisen a spec'a of commercial products which attempt to trade on the popularity of coffee. They strive to fill the world with *false alarms.*

Coffee needs no apologist. It is Nature's gift. Simply be sure that you drink good, *pure* coffee.

SIGNIFICANT—*Doctor Valentine Nalpeau, of the Faculty of Medicine, of Paris, says:—"Coffee vitalizes the muscles, animates the circulation, facilitates digestion and makes intellectual work more easy."*

COFFEE—Our Favorite Drink

passing of our old "bugaboos"

We outgrow our old foolish fears~

Who now is afraid of

COFFEE

People once were afraid of the steam engine. "It will blow up"—"It will jump the track"—they said. But we all know better *now.*

Time has disproved many old fallacies. Yet, some good people still believe that coffee doesn't "agree" with them,—a popular *delusion* encouraged by competitive products.

There are many food fads. Some think they can't eat bread,—some think they can't eat potatoes. There is probably no food that can be said to agree with *everybody.*

In reality—coffee is more healthful for more people than any other beverage. It is consumed in greater volume than any other. Coffee is the mainstay of the *millions.*

The government sent 2000,000 doughboys "over there" and fed them on real coffee, all they could drink,—four times a day. And there was much "nervousness"—among the *Germans!*

Ask a Brazilian to name his country's greatest service to mankind, and he will proudly answer,—"Brazil furnishes three-fourths of the world's coffee."

Prefer a dinner of bread and beef with coffee than a top-course banquet without it. And coffee is the cheapest item of your menu,—it costs *less* than two cents per cup.

SIGNIFICANT—"*The Medical Standard*" says:—"*Taken after meals coffee is an aid to digestion. Under its influence the development of digestion is more perfect and more rapid. It is a stomachic of the first order, especially when taken hot.*"

COFFEE *is* the Indispensable Drink!

Some real facts about

COFFEE

Time has dispelled many old illusions. Coal was once condemned as "injurious" and burned openly in the market place as a "public *nuisance*".

Strange things are done in the name of Health! For ten centuries the nations of the earth have enjoyed the benefits of coffee. Yet in this enlightened day coffee is sometimes declared "injurious"—another form of *superstition.*

There are many kinds of food that do not "agree" under some conditions. These are matters of personal *disability* and require professional treatment and advice.

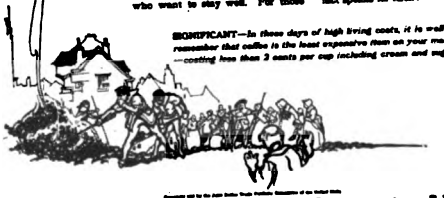
Coffee is for well people and those who want to stay well. For those who cannot be affrighted with foolish fears. For those who want to live—and do—and dare—and *accomplish!*

Coffee plays its part in the homes of the millions,—three times a day every day. Coffee helped to win the War. It fed suffering Belgium. In Holland, coffee is always ready to serve—and its people are *healthy.*

In Brazil, which produces three-fourths of the world's coffee, they drink coffee all day long. And the Brazilians are one of the most robust and progressive nations in South America.

In America one billion pounds of coffee are consumed every year—This fact speaks for itself!

SIGNIFICANT—*In these days of high living costs, it is well to remember that coffee is the least expensive item on your menu,—costing less than 2 cents per cup including cream and sugar.*



Drink COFFEE *and* Remain Well!

COPY THAT STRESSED THE HEALTHFULNESS OF COFFEE, 1919-1920

PLANS FOR SCIENTIFIC COFFEE RESEARCH

THE COFFEE CLUB

BETTER COFFEE MAKING DRIVE

MANY AWAIT FIRST NEWS OF RESEARCH

HOUSE ORGAN FOR NATIONAL CAMPAIGN

WILL APPEAL TO DEALERS

Transparent Sign for Dealer Windows

The Coffee Club

WILL SUFFRAGE HELP ANY?

JOBBERS' BUYERS

THE JOINT COMMITTEE'S HOUSE ORGAN

United States on the basis of one cent per bag handled annually. This American fund is used for the expenses of administration, for educational advertising outside of magazine and newspaper space, and for various kinds of trade promotion and dealer stimulation.

The first advertising appeared in April, 1919, in 306 leading newspapers in 182 large cities, with a total circulation of more than 16,000,000. The cities chosen represented all the centers of wholesale coffee distribution.

Magazine advertising began in June of the same year, using twenty-one periodicals, all of national circulation. This list has been changed from time to time to meet the special needs of the campaign.

More than fifty grocery-trade magazines have carried the committee's dealer advertising, although not all of these have been used continuously. Every part of the country was represented on the trade-paper list.

Full pages have been run each month in nine of the leading national medical journals. These advertisements were written by a physician of national reputation. Under the caption, "The Case for Coffee," these advertisements have discussed the properties of coffee from the physiological standpoint, and have asked the doctors to judge it fairly.

From the start the committee's advertising has been broadly educational. The properties of coffee have been discussed; charges against coffee have been answered. The housekeeper has been told how to get the best results from the coffee she buys; hotel and restaurant proprietors have been reminded that many of them owe their prosperity largely to a reputation for serving good coffee; new uses have been exploited for coffee, as a flavoring agent for desserts and other sweets; employers have been taught the important service good coffee may render in increasing the comfort and efficiency of their working forces.

Magazine and newspaper advertising is only the nucleus of the campaign. The effect of such "white space" publicity is increased by simultaneous efforts to "merchandise" the campaign, to stimulate the interest of the wholesale and retail trade, to encourage private-brand advertising, and to reach the consumer by other kinds of

The Case For Coffee

Number One

As members of what has been praised as "the most useful profession in the world," you are daily called upon to advise your patients, to allow or to forbid certain articles of food or drink, according first to your scientific knowledge, and second to your practical experience. You are regarded as scientific men, hence your knowledge should be exact, true, temperate, neither influenced by hearsay nor shaded by prejudice. There are half-truths in medicine, made clever use of by certain sophists, whose motives are tinctured with commercialism. Clever effort and subtle appeal may distort fact and disturb proportions. You are called upon to differentiate in diagnosis. You should be equally able and conscientious in your analysis of the written or the spoken word. One of your great scholars has declared, "There is no authority in medicine but common sense and proven fact."

Take, for example, the case of COFFEE.

You are asked to regard it as a "dangerous" beverage, and you have been influenced perhaps to believe or to incline to the opinion that the accusations and the arguments against coffee are rational and scientifically well-founded.

But to be fair, judicial, to be true to the ideals of your profession, you owe it to yourselves and to your patients to consider *both* sides of the question, to weigh the evidence, to separate the chaff of theory from the wheat of fact, before you judge—or act.

The case for COFFEE will be presented in succeeding issues of this and other medical journals.

Copyright 1920 by the Joint Coffee Trade Publicity Committee of the United States

INTRODUCTORY MEDICAL-JOURNAL COPY

The Case For Coffee

Number Two

As a rule you do not absolutely cut off flesh proteins from your patients' diet. Yet certain of the intermediate and end products of protein digestion are virulently toxic, capable of producing organic degeneration (sclerosis) or functional disorder, neuralgia, asthma, urticaria, etc. You guard against excess, but you do not forbid moderation. That coffee taken in excess can induce functional manifestations, is undeniable. But that, used as it is used by 98 per cent. of individuals, coffee can or does exert the harm ascribed to it, is contrary to practical experience or scientific fact. Egg protein poisons a very small number, an infinitesimal proportion of its eaters. Why not condemn for that reason the use of eggs by everybody? Yet this would be as logical and as rational as to attempt to label coffee as a "dangerous" drug! Milk, acting as a medium for the transmission of pathogenic bacteria, has slain many a victim and incapacitated many more. Yet milk is not pronounced anathema! The fuel value of sugar is just as well established as the fact that *abuse* of sugar is productive of serious disease. The evil action and effect of flesh, milk, eggs or sugar taken to excess can be—has been—demonstrated in laboratory and clinic. Not so in the case even of the abuse of COFFEE. As a matter of fact, the evil effects of COFFEE—as charged, can be—as a rule—ascribed to other causes than the actual action of coffee itself. Remember, gentlemen, that *post* and not *propter hoc*, has always proven to be a stumbling block in the progress of scientific medicine. Consider coffee from the viewpoint of what it *is* and what it *does*, not upon prejudicial or commercially influenced criticism or hearsay. More anon.

Copyright 1920 by the Joint Coffee Trade Publicity Committee of the United States

The Case For Coffee

Number Three

Half-truths have, from Galen's time or before, handicapped the progress of scientific medicine. The assumed prejudicial effects of coffee are ascribed to its caffein content. Caffein as employed as a *drug* in therapeutics is really *thein* obtained, not from coffee at all, but from old tea leaves. Caffein and thein are said to be *chemically* identical. It does not follow of necessity that the physiological action of extracted thein is identical with the caffein of coffee prepared as a beverage. According to Hutchinson, raw Mocha coffee contains 1.06 per cent. caffein which is reduced to 0.82 per cent. by roasting. Only from 25 to 35 per cent. of coffee infused goes into solution. The average quantity of coffee infusion taken at meal time or otherwise, is smaller by far than is made to appear by its accusers. The actual dose of caffein, i. e. of the coffee caffein in such infusion is also much less than is made to appear by its critics. Comparison between the dose in grains of extracted caffein employed as a cardiac stimulant therapeutically, and the actual amount of natural caffein in infused coffee, will suggest that the dose of caffein in coffee taken as a beverage is entirely too small to produce the physiological effects ascribed to it. Too often physicians think in terms of gross instead of in terms of net. For example, many regard egg albumin as practically all nutriment, whereas in fact 86 per cent. of it is nothing but water! "A sense of proportion is a great iconoclast." The fallacy of perhaps the most used argument against the reasonable use of coffee is thus apparent.

What, as a matter of *fact*, is the action of coffee when taken as a beverage? See next issue.

Copyright 1920 by the Joint Coffee Trade Publicity Committee of the United States

The Case For Coffee

Number Four

It must be admitted that until very recently medical knowledge of the actual dietetic value and consequent therapeutic worth of various foodstuffs and beverages, has been largely theoretical. Hence, the opponents of coffee have relied upon arguments based upon supposed facts assumed to have been established. For example, coffee has been regarded as capable of interfering with the digestion of food and inhibiting the elimination of waste material. Vaguely expressed, coffee can cause "biliousness," "dyspepsia," etc. Fraser has stated that caffein of coffee favors digestion rather than otherwise. Hutchinson states that, "As regards the practical inference to be drawn from these experiments and observations, it may be said that in health the disturbance of digestion produced by the infused beverages is negligible." He quotes Roberts as suggesting that the slight slowing of digestion they produce may be favorable as tending to compensate for too rapid digestibility which refinements of manufacture and preparation have made characteristic of modern foods! So much for another half-truth so much depended upon and used by coffee critics. Hutchinson also states, "the question has been much debated whether or not caffein lessens the waste of the body." "Indeed," he concludes, "all experiments go to prove to the contrary, namely that caffein tends to increase rather than diminish tissue waste."

Another fallacy exposed—the far-fetched claim that coffee hinders elimination and lessens the removal of products of digestive waste.

Copyright 1920 by the Joint Coffee Trade Publicity Committee of the United States

The Case For Coffee

Number Five

Physicians realize the difference between justifiable use and reprehensible abuse—of anything. Excessive use, i. e., abuse of coffee is not only exceedingly uncommon, but also productive of no really serious effects.

At the worst, abuse of coffee, is claimed—not shown, to produce "nervousness" or "sleeplessness" or "palpitation"—all symptoms of functional disturbance, which in the majority of cases if not in all, may be logically and rationally ascribed to other factors present and operating. As a matter of fact, Hutchinson—one of the best dietetic authorities—declares, "Whilst one may fully admit the importance of the part played by tea and coffee in the production of such symptoms, yet the extent to which they prevail has probably been greatly overestimated. It certainly seems an exaggeration." Coffee stimulates the vital centers and the brain cortex. It is an antidote for opium poisoning. Respiratory movements are deeper, the heart beats more forcibly, and urinary secretion is increased by coffee, which when taken hot, as it usually is, helps to stimulate peristalsis and bring about bowel evacuation. Coffee has always been the beverage of the intellectual, of the soldier, sailor, explorer, the man who works hard either with his head or his hands. Coffee played a vitally important part in the late war. Coffee serves a no less important purpose in times of peace. Attempts have been, are being made, to "substitute" other things for coffee. But the medical profession has long ago become familiar with the motives and methods of "substitution" and of the "substitutor." Is it not true that most of criticism or condemnation of coffee is due to open or occult efforts of makers of "coffee substitutes?" Physicians should—and usually do—discriminate between scientific facts and selfish propaganda. More to come.

Copyright 1920 by the Joint Coffee Trade Publicity Committee of the United States

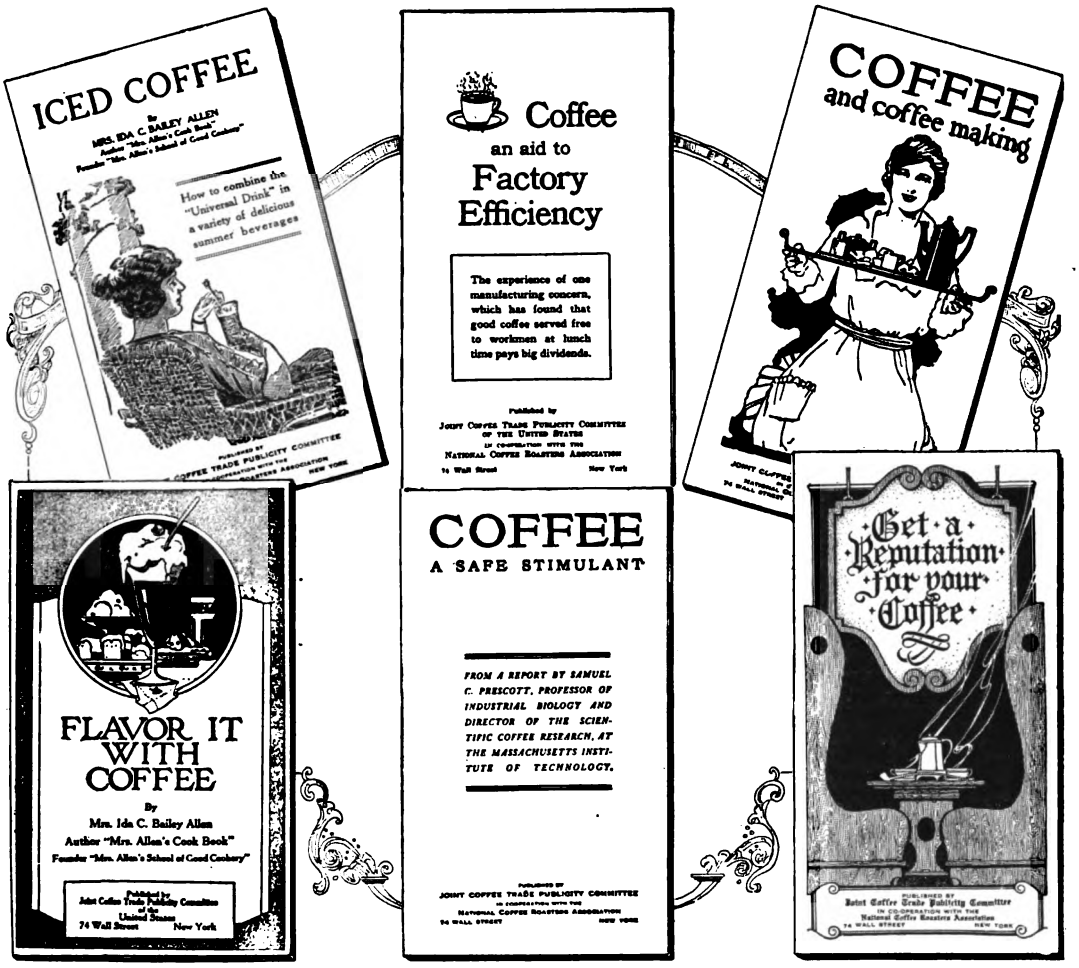
TELLING THE DOCTORS THE TRUTH ABOUT COFFEE, 1920

publicity recognized as essential factors in a well rounded national advertising effort. These activities may be summarized as follows:

INFORMATION SERVICE: This department answers inquiries and supplies material for household editors, and for newspaper and magazine writers. Through a national clipping service, it keeps in touch with all published matter relating to coffee. Its special duty is to answer attacks on coffee and the coffee trade. Merchants and dealers make it a practise, when they find misleading articles or editorials in their local newspapers, to send clippings to the committee's headquarters to be handled there as the situation warrants.

SCIENTIFIC COFFEE RESEARCH. Twenty-two thousand, five hundred dollars of the American fund have been appropriated thus far for scientific coffee research at the Massachusetts Institute of Technology. The reports of this research will be distributed to the coffee trade throughout the country, and should prove valuable in all branches of coffee merchandising. The findings will be distributed by the committee to schools and colleges, and to consumers through national advertising.

THE COFFEE CLUB. This organization was established for the purpose of educating the consumer through constructive team work by the roasters' and jobbers' salesman and the retail dealer. Under this plan, the committee has distributed 50,000 transparent signs for dealers' windows, and 5,000 bronze coffee-club buttons for coffee salesmen. By reference to the Coffee Club


ICED COFFEE
How to combine the "Universal Drink" in a variety of delicious summer beverages
Coffee
an aid to
Factory
Efficiency
The experience of one manufacturing concern, which has found that good coffee served free to workmen at lunch time pays big dividends.
COFFEE
and coffee making
FLAVOR IT WITH COFFEE
By
Mrs. Ida C. Bailey Allen
Author "Mrs. Allen's Cook Book"
Founder "Mrs. Allen's School of Good Cookery"
COFFEE
A SAFE STIMULANT
FROM A REPORT BY SAMUEL C. PRESCOTT, PROFESSOR OF INDUSTRIAL BIOLOGY AND DIRECTOR OF THE SCIENTIFIC COFFEE RESEARCH, AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY.
Get a Reputation for your Coffee

SOME OF THE JOINT COMMITTEE'S ATTRACTIVE BOOKLETS

The Case For Coffee

Number Six

What experienced physician can or will deny the power and influence of suggestion—auto or extra—upon the mind and body of his patients—or himself? Such suggestion influences the action and effect of foods as well as drugs—one patient cannot eat this; another can. Certain patients, provided suggestion is sufficiently potent, ascribe benefit to medicine taken that is purely placebo. Herein may be found the explanation of the harmful effects ascribed to coffee, by the exceedingly small number of people who claim to be injuriously affected by it—as well as the efforts of those who are selfishly interested in the exploitation of coffee substitutes. Those who are susceptible to the power of suggestion, respond quickly to oft-repeated fallacy or distorted statement. Easily convinced themselves, they succeed in influencing others. The result of this is a collection of so-called clinical evidence that is apt to influence the careless physician who does not analyze carefully, who overlooks the importance of *post non propter hoc* in the Science and Art of Medicine. "He gets not far in medicine who takes anything for granted." Hence, the conscientious and the wise doctor should not accept without analysis, nor condemn without reason.

He should differentiate between fallacy and fact, in order that he may most efficiently practice the art which above all other arts, demands accurate and exact estimation of the relation between cause and effect. Eschew suggestions—hold fast to facts. See next issue.

Copyright 1920 by the Joint Coffee Trade Publicity Committee of the United States

The Case For Coffee

Number Seven

We owe to Pavlov, and other eminent seekers after physiological truth, the knowledge of the value of mental stimulation in producing the so-called "appetite juice" without which gastric digestion cannot be efficiently performed. Hence we can understand why and how, to most individuals, the thought, anticipation and odor of the morning cup of coffee is of practical value in bringing about the proper enjoyment and digestion of what is or should be the most important of the daily meals.

"Without coffee," wrote a wise doctor, "breakfast is a meal instead of an institution." The craving for the matutinal cup of coffee is not a cry of the body for a stimulating drug, not the prompting of a bad habit. It is a physiological demand for aid in the performance of normal digestion.

Nature is wise in her provision of coffee to begin the first meal of the day, to awaken and activate digestive processes made dormant during the period of the body's lowest vitality. Also of coffee after dinner to assist in the digestion of the heaviest meal when functions are depressed as a result of the day's struggle. If coffee be a habit—so is appetite. One is almost as helpful and as necessary to the average individual as is the other.

Realizing these *facts*, physicians will be slow to condemn or to forbid the use of coffee—in moderation—because of certain fallacies or half-truths, promulgated by those who neither analyze nor weigh the evidence, or who are influenced by prejudice, selfish interest or exploitation of substitutes for "Nature's most prized beverage." More anon.

Copyright 1920 by the Joint Coffee Trade Publicity Committee of the United States

The Case For Coffee

Number Eight

"Science," wrote a great scientist, "has neither reason nor excuse for jumping at conclusions."

Yet, "jumping at conclusions"—or the assumption of fact from insufficiently analyzed evidence—has more than anything else retarded the progress of practical medicine.

Assumption, for example, that uric acid is the cause of rheumatism, gout and many other functional or organic disturbance or disorder of body organs or tissues, prevented for years the recognition of the true cause of such conditions and the real nature of uric acid, indican, etc.

Attempts therefore to condemn coffee as a source of uric acid or metabolic waste products, while given credence in the past, lose all force in the light of present knowledge. Old-fangled dietaries used to *proscribe* coffee—modern ones allow it or *prescribe* it. We formerly forbade sugar and carbohydrates in diabetes mellitus. Today, knowing the patient can tolerate these in moderation, we allow them to be so taken. There was a time, when all water or liquid was forbidden during fevers. We used to bleed or purge secundum artem for so-called "reasons" arrived at by "jumping at conclusions." As for coffee, accused upon hearsay and prejudice of being a "dangerous drug" capable of doing considerable harm, we now realize and recognize it as possessing definitely beneficial therapeutic properties. Let no physician condemn or forbid coffee unjustly or as a result of "jumping at conclusions."

See next issue.

Copyright 1920 by the Joint Coffee Trade Publicity Committee of the United States

The Case For Coffee

Number Nine

Hippocrates recognized the influence of temperament in the production of symptoms. It is often said that "as a nation we live and work and play upon our nerves." To "nervousness" is ascribed much of the functional disturbance that provides physicians with many patients. Why deny the fact? But on the other hand, why attempt to saddle upon certain articles of food or drink the onus of inducing "nervousness?"

Take coffee for example, accused of producing nervousness by over-stimulation of cardiac or cerebral functions. Nervousness is a mental phenomenon mostly. Excessive fatigue, overuse of muscles or mind, overwork of digestive organs, increased mental strain, worry, insistence upon brain effort in spite of Nature's effort to rest and to recuperate, impaired nutrition favored by impure or anemic blood, laden with toxins absorbed as a result of intestinal stasis, deficient oxidation or exercise, excessive use of vital forces, all these are upon analysis the causes of "nervousness." Yet how often patient and physician make or attempt to make coffee a scapegoat for symptoms complained of!

Analysis of symptoms, of secretions, and excretions, of habits, will, almost without exception, point away from coffee and toward some more rational and direct exciting cause. Withdrawal of coffee does not often remedy the condition. Removal of the real causes, usually permits of resumption of the use of coffee. Forbid coffee if you can convince your reason that it is in part responsible. But do not make it a scapegoat to excuse or avoid getting at the real cause.

See next issue.

Copyright 1920 by the Joint Coffee Trade Publicity Committee of the United States

in national magazine and newspaper advertising, the retailer is given a chance to tie up with the campaign. Membership in the club is limited to those who are contributing to the publicity fund, and to their salesmen and customers. The club publishes a monthly bulletin in newspaper form, giving the news of the campaign. This has a circulation of 27,000 among wholesalers, salesman, and dealers.

BOOKLETS. The committee has published six booklets, which have reached a total circulation of more than one and a half million copies. These booklets are sold at cost to the coffee trade. The committee reports that, on an average, one hundred requests for them are received daily at its office from consumers in different parts of the country, and that the booklets are the means of a constant campaign of education in American homes and schools.

BRAND ADVERTISING. The committee is constantly making efforts to increase the amount of private advertising by coffee roasters, and it estimates that brand advertising has increased at least three hundred percent since the national campaign began. Reproductions of the committee's advertisements, proofs of advertising electrotypes, and copy suggestions are circulated in advance to all roasters and to a large number of retailers, by means of the monthly organ, *The Coffee Club*.

COFFEE WEEK. During the week of March 29 to April 4, 1920, the committee organized and financed the third national coffee week, which was observed by retailers throughout the country. The feature of this week was a window-trimming contest for which prizes of $2,000 were distributed among several hundred grocers. The contest resulted in displays of coffee in nearly 10,000 grocery windows, and greatly increased the sale and consumption of coffee during this period.

MOTION PICTURES. The United States fund financed the production and distribution of a coffee motion picture, 128 prints of which were sold to roasters, who exhibited them throughout the country. This picture was shown during coffee week to more than six hundred theater audiences, and it remains in the possession of the trade as an active advertising medium.

When the clock swings 'round to four-
COFFEE
Right at the peak of the day's duties it pays to pause for a chummy, cheery cup of Coffee.
It is a stimulus to effort in the office or in the home—it coaxes cheerful spirits and clear-thinking for the rest of the day.
As regularly as the clock swings 'round to four, drink an appetizing, reviving cup of Coffee. Not very far from wherever you are, there is a coffee house, soda fountain, restaurant or hotel which makes a feature of Afternoon Coffee.
COFFEE — -the universal drink

Six rules for making good coffee
1. Keep your coffee air tight
2. Measure carefully
3. Use grounds only once
4. Use boiling water
5. Serve at once
6. Scour the coffee pot
COFFEE
the universal drink

SPECIMENS OF THE 1921 MAGAZINE AND NEWSPAPER COPY

*Pre*scribing vs. *Pro*scribing

BEFORE you prescribe for a patient, what do you do? You take his history; you examine him thoroughly; you note the signs and symptoms, and back in your head you interpret those symptoms in terms of pathology; you eliminate one by one the possible diseases these symptoms may indicate until you arrive at your diagnosis. Then you prescribe. Good! Why shouldn't the same careful reasoning and analysis be applied before *pro*scribing?

If this were done, coffee would be *pre*scribed rather than *pro*scribed. Because it would be found that coffee is not only harmless in at least ninety-eight per cent of your cases, but really offers itself as a therapeutic aid.

Where a mild cardiac stimulant is indicated—*pre*scribe coffee; in cases of muscular and mental fatigue—*pre*scribe coffee; in sluggish peristalsis—*pre*scribe coffee; as an antidote for certain poisons—*pre*scribe coffee; as an appetite excitant of rare influence—*pre*scribe a cup of rich, steaming coffee.

Coffee drinking is a pleasure, and to deprive your patients of the zest it lends to eating, in sickness and in health, usually is without justification in fact. Confirmation of this is found in any standard work on dietetics.

After All, the Patient Is the One Most Concerned

THE patient is the sick man. He is the sufferer. It is he who seeks—and expects—relief. He is the one most concerned. What do you do for him?

You diagnose, you prescribe, and sometimes you *pro*scribe certain foods. But do you unreservedly rule out *for every case* eggs, milk, tomatoes, strawberries, red meat, and dozens of other foods for which some few people have idiosyncrazies? No! You first determine what foods, if any, would be harmful in *each particular case*, and rule accordingly.

Then why issue, as is too frequently done, a sweeping dictum against coffee?

As you know, coffee can frequently be enlisted as a therapeutic aid. It is a mild cardiac stimulant; it relieves muscular and mental fatigue; it accelerates peristalsis; is mildly laxative; is an antidote for certain poisons; and is an appetite excitant. What greater stimulus to appetite is there than the rich aroma of steaming coffee? And maintaining a patient's appetite is important!

Dr. Julius Friedenwald and Dr. John Ruhrah, of the University of Maryland School of Medicine, Baltimore, in their joint work, "*Diet in Health and Disease*," frequently include coffee in the breakfast dietaries; and Dr. Torald Sollman, of Western Reserve University, Cleveland, in his "*Manual of Pharmacology*" says coffee "increases mental and physical efficiency, psychical stimulation, comfort and relief from muscular and mental fatigue and from their attendant unpleasant sensations. These effects may be useful in certain conditions, as in those exposed to severe hardship, hunger, fatigue, etc."

We believe a study of the cases in your own practice will convince you conclusively that there are few patients, indeed, for whom coffee is contra-indicated. We believe that such a study will convince you, too, that coffee can be enlisted as a beneficial agent bordering on the field of active therapy.

Why impose an unnecessary restriction on your patients? Why overlook a possible therapeutic aid?

Facts Would Not Justify Such a Decision

A PATIENT developed a rash after an injection of diphtheria antitoxin. But have you stopped using antitoxin in diphtheria? Hardly, because you know—you *realize*—that that patient is, perhaps one in a hundred; and to cut antitoxin from your list of therapeutic agents because of an occasional anaphylaxis would be a decision without justification.

Is there any more logic—is there any more justification in taking the joy out of your patient's breakfast, as you do when you pronounce "Cut out coffee!" without the history, the etiology, the symptomatology, the diagnosis of *each particular case* pointing conclusively, or even possibly, to coffee as a pathologic irritant?

Here is what Professor Samuel C. Prescott, head of the Department of Biology and Public Health, Massachusetts Institute of Technology, says of caffein:—

"For the great majority of normal individuals it is a mild stimulant of the heart, increases power to do muscular work, increases concentration of mental effort and therefore the power to do more brain work. It is not followed, except in excessive doses, by undesirable after-effects. Our studies lead us to entire agreement with the results stated by Hollingworth that when taken with food in moderate amount, caffein is *not in the least deleterious*."

That case management which gives relief with the least derangement of the patient's normal habits certainly is to be preferred over that which upsets his daily routine of living. Taking coffee from the breakfast of the vast majority of patients is adding hardship to illness.

Is it necessary? In how few cases is it really necessary? Turn to any work on dietetics.

Would You Prohibit Your Patients From Bathing?

THE use of water on eczematous lesions is contra-indicated; but would you, because of that, issue a sweeping ukase to your patients enjoining them from bathing?

It isn't logical, you say. Of course, it isn't! Neither is it logical, with one broad stroke, to scratch coffee from the dietary of every patient regardless of his ailment, just because it *may* be desirable to omit coffee from the regimen of a gouty or nephritic patient. A specific measure has thoughtlessly been extended to a general dictum. You're right! It isn't logical!

Striking coffee unreservedly from the menu of your patients is imposing an unnecessary hardship and depriving them of an appetite excitant of pronounced value. Furthermore, in ninety-eight per cent of your cases you are thrusting aside a possible therapeutic aid.

Consultation of "*Diet in Health and Disease*," the joint work of Drs. Julius Friedenwald and John Ruhrah, of Baltimore, tells us that coffee "*is a stimulant; it acts directly on the cerebral centers, stimulates the heart, and deepens respiration.*" Are reactions such as these to be generally avoided? Rather, aren't they, generally speaking, to be encouraged?

Analyze your cases today and note in how few—how very few—coffee is really contra-indicated by the diagnosis; and in what a large—a very large percentage coffee would possibly be beneficial, physiologically or psychologically.

NEW USES FOR COFFEE. An important factor in increasing consumption has been the promotion of new uses for coffee. In winter, this has taken the form or recipes and suggestions for coffee as a flavoring agent; and in warm weather, there has been a publicity drive for iced coffee.

Propaganda Results

The joint coffee trade publicity campaign is progressive. New features are being developed, and plans are laid well in advance. It is expected that the reports of the scientific research will furnish fresh material for both direct and indirect advertising.

One of the interesting prospects is a school exhibit, demand for which has been revealed by requests from a large number of teachers, principals, and school superintendents. Efforts to increase the popularity of a product as widely used as coffee suggest almost unlimited opportunities.

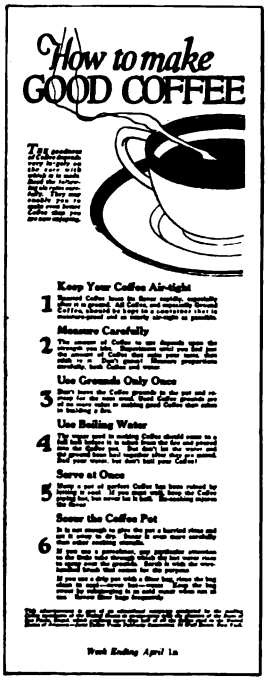
The campaign has brought into co-operation producers in one country, and manufacturers and distributers in another country, several thousand miles apart. Its international character, and also the fact that it deals with a product of almost universal use, may account for the attention this campaign has received, not only in the United States, but in every country where advertising is a business factor.

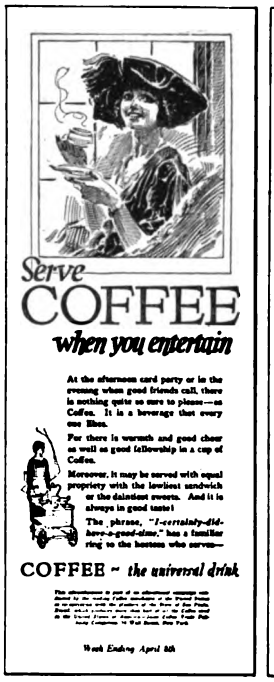
This kind of coffee publicity has given the consumer a better knowledge of coffee, and broken down much of the prejudice against coffee that rested upon popular misunderstanding of its physiological effects.

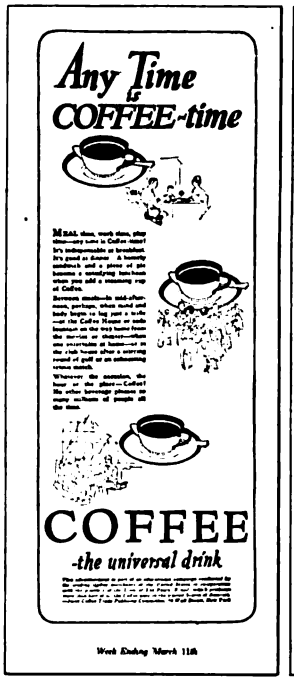
As best evidence of its sincere wish to give the public the whole truth about coffee, the committee points to the fact that a portion of its funds is being used to finance the scientific investigation at the Massachusetts Institute of Technology.

Felix Coste, the secretary-manager of the campaign, spends much of his time traveling about the country and addressing gatherings of coffee wholesalers and dealers. By this means, and by continuous circularization and correspondence, the trade is kept constantly in touch with the developments of the campaign.

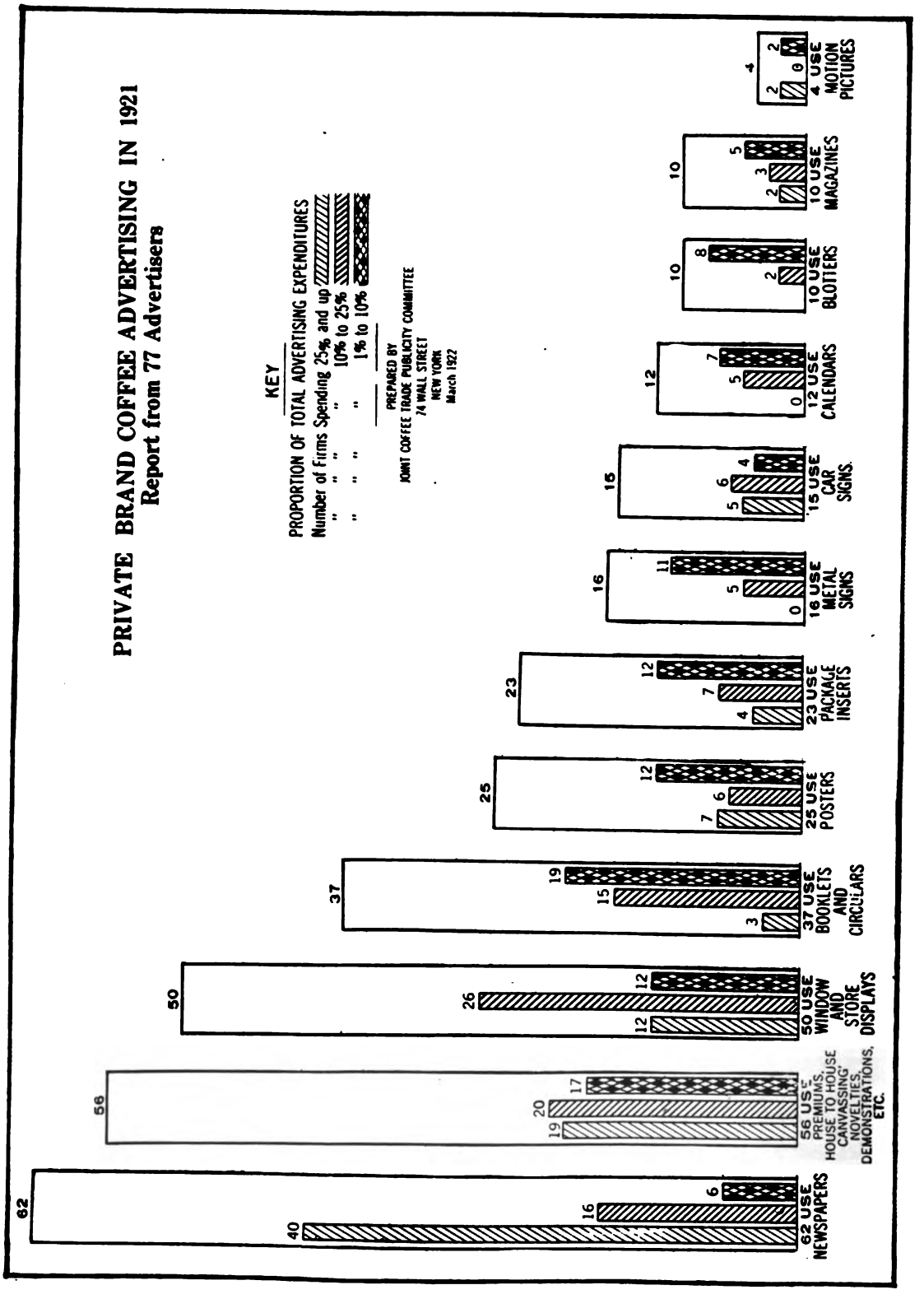
Although Brazil is the only coffee-producing country at present co-operating, the advertising has treated all coffees alike. Efforts are being made to have the coffee







MAGAZINE AND NEWSPAPER ADVERTISING COPY, SPRING OF 1922


PRIVATE BRAND COFFEE ADVERTISING IN 1921
Report from 77 Advertisers
KEY
PROPORTION OF TOTAL ADVERTISING EXPENDITURES
Number of Firms Spending 25% and up
" " " 10% to 25%
" " " 1% to 10%
PREPARED BY
JOINT COFFEE TRADE PUBLICITY COMMITTEE
74 WALL STREET
NEW YORK
March 1922
62 USE NEWSPAPERS
56 USE PREMIUMS, HOUSE TO HOUSE CANVASSING, NOVELTIES, DEMONSTRATIONS, ETC.
50 USE WINDOW AND STORE DISPLAYS
37 USE BOOKLETS AND CIRCULARS
25 USE POSTERS
23 USE PACKAGE INSERTS
16 USE METAL SIGNS
15 USE CAR SIGNS.
12 USE CALENDARS
10 USE BLOTTERS
10 USE MAGAZINES
4 USE MOTION PICTURES

Famous Men and Places in the History of the World's Favorite Beverage
The Crowning Achievement
YUBAN
The Arbuckle Guest Coffee
35¢

SPECIMEN OF EARLY YUBAN COPY

growers of other countries contribute on a basis proportionate to the benefit they derive. Support from all the coffee countries on the same scale as that on which the producers of São Paulo are contributing would almost double the size of the fund.

Coffee Advertising Efficiency

Reverting to the original advertisement for coffee in English, when we compare it with the latest examples of advertising art, it is of the same order of merit. But Pasqua Rosée had no advertising experts to advise him and no precedents to follow. Pasqua Rosée was a native of Smyrna, who was brought to London by a Mr. Edwards, a dealer in Turkish merchandise, to whom he acted as a sort of personal servant. One of his principal duties was the preparation of Mr. Edwards' morning drink of Turkish coffee.

"But the novelty thereof," history tells us, "drawing too much company to him, he [Mr. Edwards] allowed his said servant, with another of his son-in-law, to sell it publicly." So it came about that Pasqua Rosée set up a coffee house in St. Michael's Alley, Cornhill.

And since Pasqua Rosée's idea, naturally, was to acquaint the London public with the virtues and delectable qualities of the product of which his prospective customers were naturally uniformed, he put into his advertisement those facts and arguments which he felt would be most likely to attract attention, to excite interest, and to convince. If the reader will glance at Rosée's advertisement, which is reproduced on page 55, he will be struck with the well-nigh irresistible charm of his unaffected, straightforward bid for patronage. Having no advertising fetishes to warp his judgment, he told an interesting story in a natural manner, carrying conviction. It matters not that some of the virtues attributed to the drink have since been disallowed. He believed them to be true. Few there were in those days who knew the real "truth about coffee."

Even his typography, unstudied from the standpoint of modern "display," is attractive, appropriate, and exceedingly pleasant to the eye. And since at that time there was no cereal substitute or other bugaboos to contend against, and to hinder him from doing the simple, obvious thing in advertising, he did that very thing — and did it exceedingly well.

HISTORICAL ASSOCIATION IN ADVERTISING

"Good to the Last Drop"
MAXWELL HOUSE
COFFEE
Also Maxwell House Tea
CHEEK-NEAL COFFEE CO.
WHITE HOUSE
Coffee
For your personal convenience, keep it in its original double-sealed package—Don't tear or cut off top
DWINELL-WRIGHT CO. BOSTON · CHICAGO
The Favorite Coffee of Exclusive Boston
42c per pound
La Touraine
"The Coffee of Good Taste"
Chase & Sanborn's
SEAL BRAND
COFFEE
A National Favorite
I drink Yuban. You ask why? It is coffee as I have imagined it—it has the flavor I have wanted for years
YUBAN
The Arbuckle Guest Coffee
At Last!
A New Kind of Coffee!
Franco-American
COFFEE
COFFEE BOUQUET
CW
COFFEE
THE WIDLAR CO.
The Aroma is kept for YOU!
If you are a lover of coffee you know what aroma really means—
Why!
MJB Coffee
MJ·B Coffee -it's ever fresh

PACKAGE-COFFEE ADVERTISING IN 1922

Specimens of newspaper copy used by some of the most enterprising package-coffee advertisers, East and West

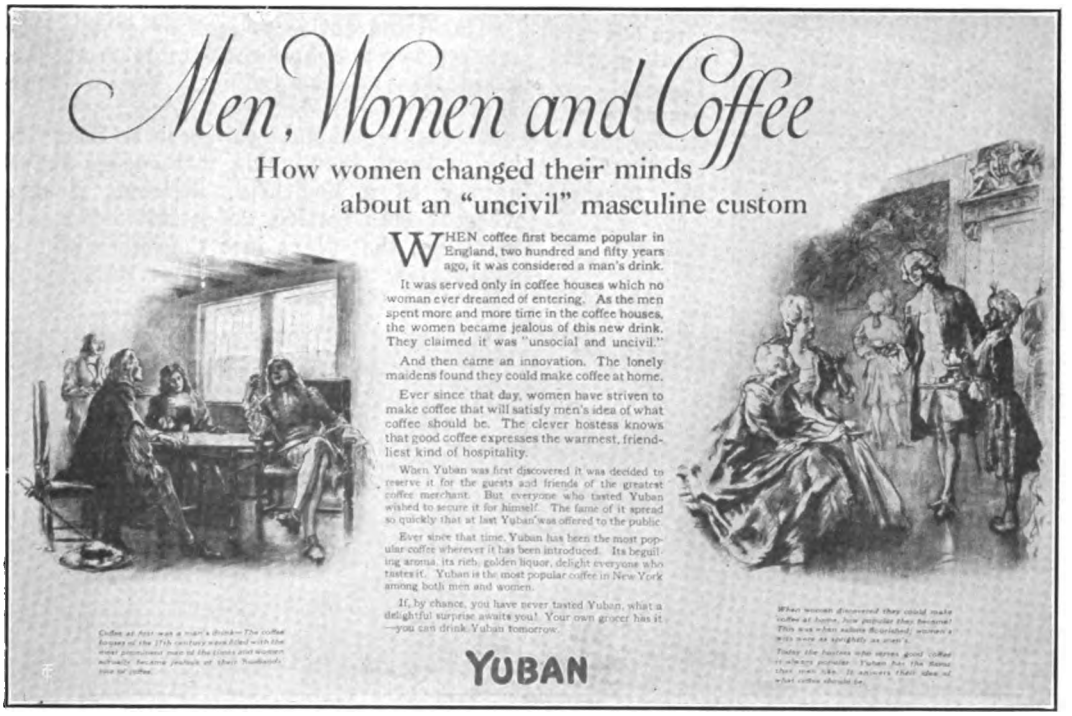
In fact, in the historic advertisement, Pasqua Rosée set an example and established a copy standard which had a very beneficial effect on all the coffee advertising of that early date. This will be evident from a glance at the accompanying exhibits of other early advertisements. It was not until the days of so-called "modern" advertising that coffee publicity reached low-water mark in efficiency and value. In these dark days most coffee advertisers ignored the principles discovered and applied in other lines of grocery merchandising. Instead of telling their public how good their product was, they actually followed the opposite course, and warned the public against the dangers of coffee drinking! Instead of saying to the public, "Coffee has many virtues, and our brand is one of the best examples," their text said in effect, "Coffee has many deleterious properties; some, or most, of which have been eliminated in our particular brand."

They were, for the most part, apostles of negation.

Hopeful signs, however, are multiplying that this condition of things in the coffee industry has passed, and that the practise

"How I Became Famous For My Coffee"
Mr. Quinby Asks You to Try This Coffee Test
Found Real Coffee At Last
A Distinctive Thing in Flavor
42c per pound
La Touraine
"The Coffee of Good Taste"

EMPHASIZING THE SOCIAL-DISTINCTION ARGUMENT


Men, Women and Coffee
How women changed their minds about an "uncivil" masculine custom
WHEN coffee first became popular in England, two hundred and fifty years ago, it was considered a man's drink.
It was served only in coffee houses which no woman ever dreamed of entering. As the men spent more and more time in the coffee houses, the women became jealous of this new drink. They claimed it was "unsocial and uncivil."
And then came an innovation. The lonely maidens found they could make coffee at home.
Ever since that day, women have striven to make coffee that will satisfy men's idea of what coffee should be. The clever hostess knows that good coffee expresses the warmest, friendliest kind of hospitality.
When Yuban was first discovered it was decided to reserve it for the guests and friends of the greatest coffee merchant. But everyone who tasted Yuban wished to secure it for himself. The fame of it spread so quickly that at last Yuban was offered to the public.
Ever since that time, Yuban has been the most popular coffee wherever it has been introduced. Its beguiling aroma, its rich, golden liquor, delight everyone who tastes it. Yuban is the most popular coffee in New York among both men and women.
If, by chance, you have never tasted Yuban, what a delightful surprise awaits you! Your own grocer has it —you can drink Yuban tomorrow.
YUBAN

DRAWING UPON HISTORY FOR SOCIAL-INTERCOURSE ATMOSPHERE

of telling the coffee story with certitude will soon become general.

We may well applaud the publicity work of all coffee advertisers who follow where Pasqua Rosée led — those who tell the public how good coffee is to drink and how much good it does you if you drink it. Considering the advertising and typographical resources available to the modern advertiser, it certainly should be possible for this message to be conveyed to the public with at least some of the charm of the first coffee message.

One of the most notable examples of how to advertise coffee well is that set by Yuban coffee. Unquestionably, Yuban is doing in a thoroughly up-to-date and appropriate fashion what Pasqua Rosée started out to do in 1652.

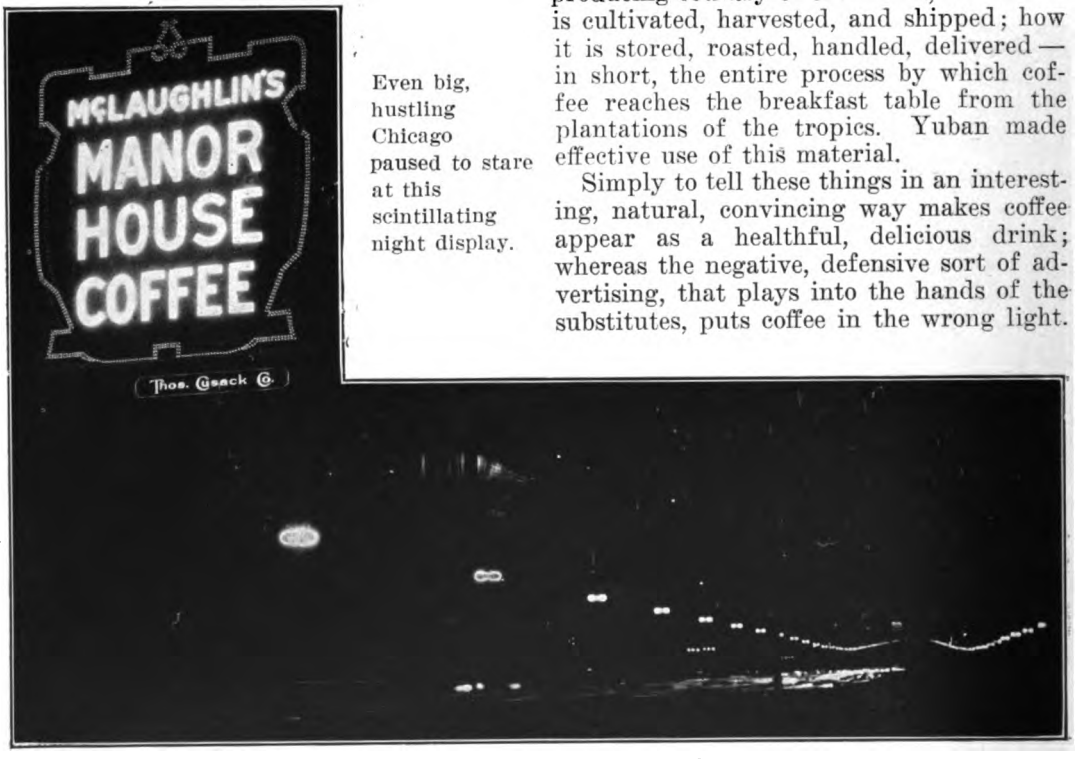
The effect on those who give only a superficial glance at a Yuban advertisement is to arouse a keen desire to enjoy a cup of Yuban coffee. To induce such a state of mind is, of course, the object of all good advertising.

Yuban advertisements have utilized two vital principles in influencing the minds of consumers. In the first place, they have made a cup of coffee seem to be a very delectable drink. In the second place, they have made the serving of a cup of coffee seem to be of the greatest social value.

One does not see in a Yuban advertisement any reference to the "removal of caffein", or to Yuban's "freedom from defects common to other coffees." There is no reference to the ill effects of drinking ordinary coffee. Yuban wastes no valuable space in unselling coffee. Instead, the whole intent, effectively carried out, is to paint an enticing picture by descriptive phraseology, typographic "manner", and illustrative treatment.

Until Yuban came, those of us in the coffee trade who had given the matter thought had often wondered why, with the wealth of material available to writers of coffee advertisements, so little had been done to make the product alluring — why so little had been done to give atmosphere to the product. So many interesting things may be said about the history of coffee; the spread of the industry through various countries; how Brazil came to be the coffee-producing country of the world; how coffee is cultivated, harvested, and shipped; how it is stored, roasted, handled, delivered — in short, the entire process by which coffee reaches the breakfast table from the plantations of the tropics. Yuban made effective use of this material.

Simply to tell these things in an interesting, natural, convincing way makes coffee appear as a healthful, delicious drink; whereas the negative, defensive sort of advertising, that plays into the hands of the substitutes, puts coffee in the wrong light.



Even big, hustling Chicago paused to stare at this scintillating night display.

AN ELECTRIC SIGN THAT IMPRESSED CHICAGO

There were 4,000 bulbs in this advertisement, which measured 50 x 55 feet. The rental was $3,500 a month

HOW THREE WELL KNOWN BRANDS OF COFFEE HAVE BEEN ADVERTISED OUTDOORS

ATTENTION-ATTRACTING CAR CARDS, SPRING OF 1922

EFFECTIVE ICED-COFFEE COPY—ADAPTABLE FOR ANY BRAND

When one reads Yuban advertisements, they are seen to be an entirely acceptable and appropriate presentation of coffee merit and thoroughly in accord with the principles of good advertising, as exemplified in all other lines of trade. The wonder grows why so many coffee advertisers have been content to remain in the defensive, controversial position into which the alarmist coffee-substitute advertising has jockeyed them.

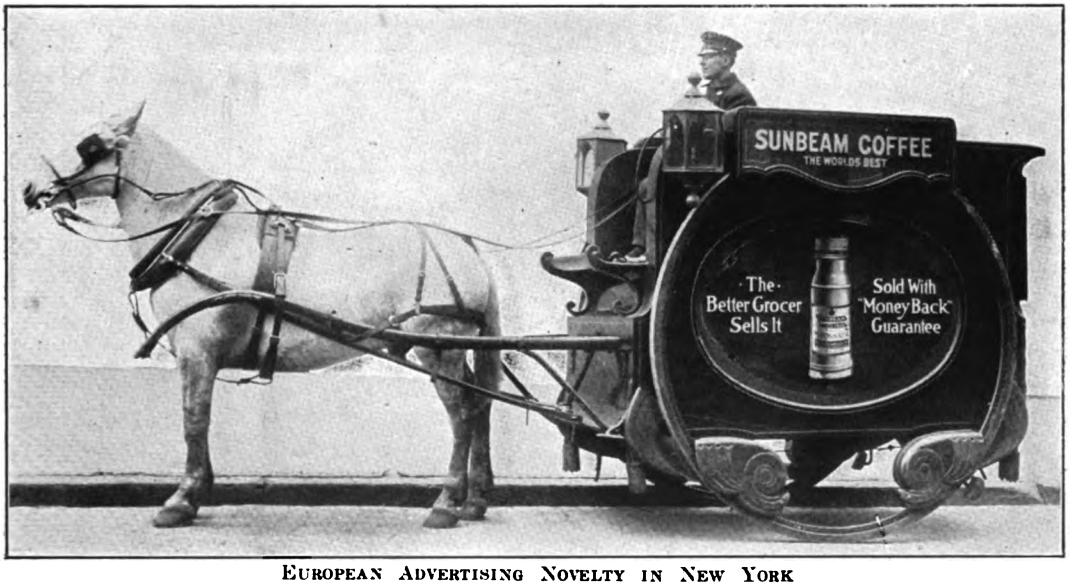
The Yuban advertisements are not without their faults; errors of historical facts can be found in them; definitions are sometimes mixed; some of the drawings might be better; but, in the main, the copy is convincing and praiseworthy.

In Yuban advertisements the things that have been so long left undone have now been done in a masterful way. If we refer to the accompanying illustrations, we can see how effectively the public is being led to realize and believe in:

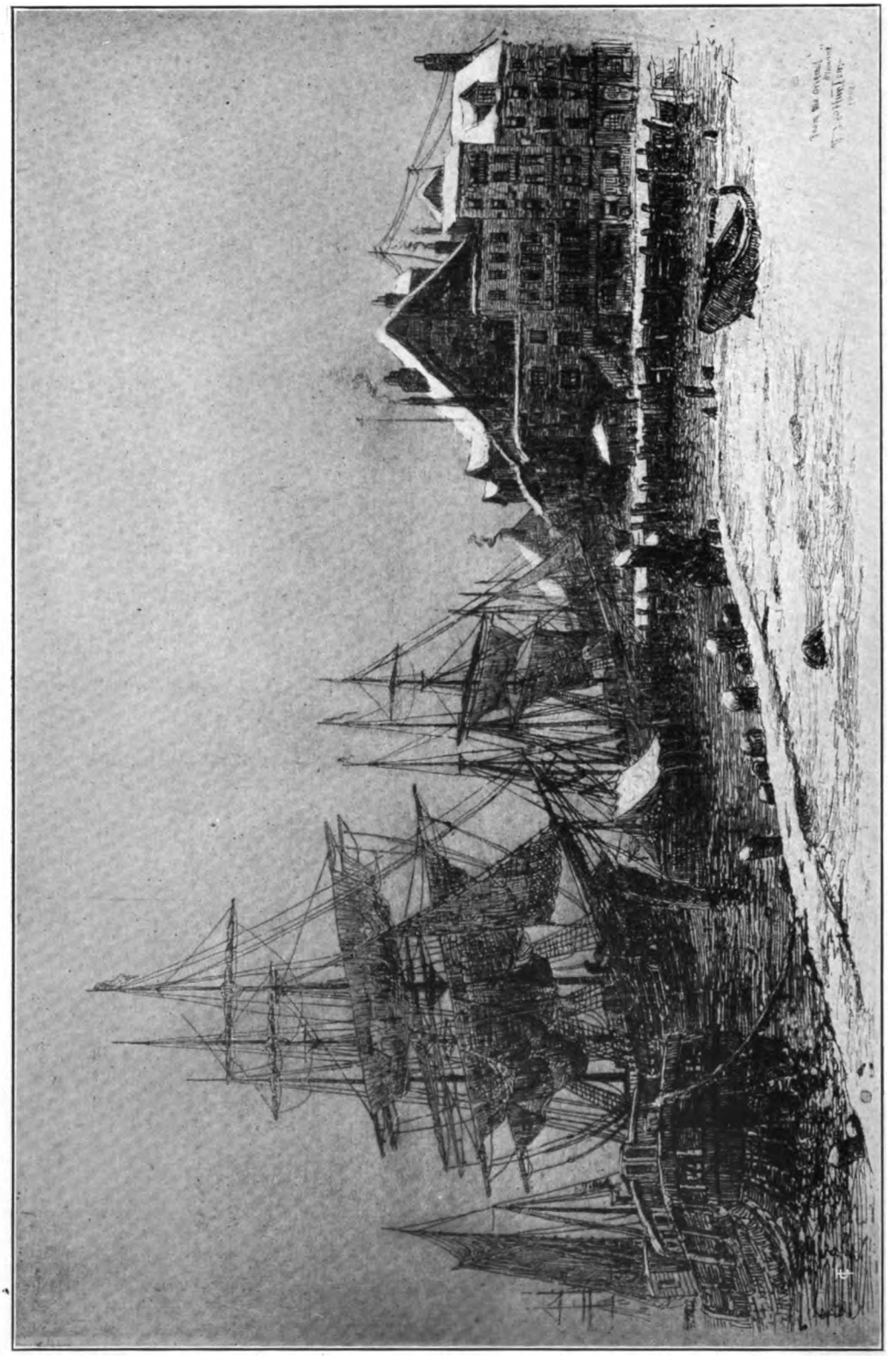
1. The intrinsic desirability of coffee — the actual pleasure to be derived from the act of partaking of it.
2. That it is delightful medium for social intercourse — part of the essential equipment for an intimate chat or more general assemblage of friends.
3. That its proper service is a badge of social distinction — the mark of a successful hostess.

These three thoughts, dominant in Yuban advertising, should be woven into the fabric of all coffee advertising. For with these three thoughts, Arbuckle Brothers have blazed the trail for the right thing in coffee advertising.

The Yuban case has been so largely dwelt upon here because it sets so bright and shining an example. Much that is praiseworthy in it and more along the same lines is true of White House, Hotel Astor, and Seal Brand; but the copy shown will illustrate this better than any comment.



EUROPEAN ADVERTISING NOVELTY IN NEW YORK
The absence of visible wheels aroused much curiosity in this slow-moving vehicle



COENTIES SLIP, NEW YORK, IN THE DAYS OF SAILING VESSELS

Many coffee ships from the West Indies, Arabia and the Dutch East Indies unloaded their cargoes here—From a copper-plate etching by F. Lee Hunter

Chapter XXIX

THE COFFEE TRADE IN THE UNITED STATES

The coffee business started by Dorothy Jones of Boston — Some early sales — Taxes imposed by Congress in war and peace — The first coffee plantation-machine, coffee-roaster, coffee-grinder, and coffee-pot patents — Early trade marks for coffee — Beginnings of the coffee urn, the coffee container, and the soluble-coffee business — Statistics of distribution of coffee-roasting establishments in the the trade from the eighteenth century to the twentieth

IT appears from the best evidence obtainable that the coffee trade of the United States was started by a woman, one Dorothy Jones of Boston. At least, Dorothy Jones was the first person in the colonies to whom a license was issued, in 1670, to sell coffee. It is not clear whether she sold the product in the green bean, roasted, "garbled" (ground), or "ungarbled".

Soon after the introduction of the coffee drink into the New England, New York, and Pennsylvania colonies, trading began in the raw product. William Penn bought his green coffee supplies in the New York market in 1683, paying for them at the rate of $4.68 a pound. Benjamin Franklin engaged in the retail coffee business in Philadelphia, in 1740, as a kind of side line to his printing business.

"Tea, coffee, indigo, nutmegs, sugar etc." were being advertised for sale in 1748 at a shop in Boston, "under the vendue-room in Dock-Square." Coffee was also to be had in that year at the shop of Ebenezer Lowell in King Street, and at the Sign of the Four Sugar Loaves near the head of Long Wharf.

During the sway of the coffee houses, coffee fell from $4.68 a pound to 40 cents a pound in 1750, and to 22 cents a pound just before the Revolution. As the war came on, however, dealers began to force up prices on a dwindling market. The situation became so serious that in January, 1776, the Philadelphia Commission of Inspection issued a fair-price list, setting an arbitrary price of eleven pence per pound on coffee in bag lots. Persons found violating this price were to be "exposed to public view as sordid vultures preying on the vitals of the country."

Despite this threat, J. Peters in Bethlehem, Pennsylvania, wrote to a Philadelphia friend, "I cannot purchase any coffee without taking, too, one bill a tierce of Claret & Sour, and at £6.8 per gall. . . . I have been trying day for day, & never could get a grain of Coffee so as to sell it at the limited price these six weeks. It may be bought, but at 25/ per lb."

The important part played by the coffee houses of colonial America, beginning with the establishment of the London coffee house in Boston, in 1689, the King's Arms in New York in 1696, and Ye coffee house in Philadelphia in 1700, has been related.

"Females" of ye olde Boston, staging in 1777 a "coffee party" which rivaled in a small way the famous Tea Party in 1773, personally chastised a profiteer hoarder of foodstuffs, and confiscated some of his stock, according to a letter from Abigail Adams to her distinguished husband, later second president of the United States.

Writing at Boston, under date of July 31, 1777, Abigail wrote to John, then attending the Continental Congress at Philadelphia:

> There is a great scarcity of sugar and coffee, articles which the female part of the state is very loath to give up, especially whilst they consider the great scarcity occasioned by the merchants having secreted a large quantity. It is rumored that an eminent stingy merchant, who is a bachelor, had a hogshead of coffee in his store, which he refused to sell under 6 shillings per pound.
>
> A number of females — some say a hundred, some say more — assembled with a cart and trunk, marched down to the warehouse, and demanded the keys.
>
> Upon his finding no quarter, he delivered the keys, and they then opened the warehouse, hoisted out the coffee themselves, put it into a trunk, and drove off. A large concourse of men stood amazed, silent spectators of the whole transaction.

In 1783 - 84 the Congress of the United States considered the imposition of a duty on "seven classes of goods consumed by the rich or in general use; liquors, sugars, teas, coffees, cocoa, molasses and pepper; the tax to be determined by the yearly imports."

At that time there was being imported twelve times as much Bohea tea as of all others, but tea consumption was only one-twelfth pound per capita. Total tea imports were 325,000 pounds. "Low as was the importation of tea", says John Bach McMaster, "that of coffee was lower still by a third. Indeed, it was scarcely used outside of the great cities." The average annual coffee imports at that period were 200,000 pounds.

Governor Bowdoin of Massachusetts introduced chicory into the United States in 1785.

The first import duty, of two and one-half cents a pound, was levied on coffee by the United States in 1789. The principal sources of supply up to that time were the Dutch East Indies, Arabia, Haiti, and Jamaica; and most of the business was in the hands of Dutch and English traders.

What is thought to be the first wholesale coffee-roasting plant in America began operations at 4 Great Dock (now Pearl) Street, New York, early in 1790. In that same year the first American advertisement for coffee appeared in the *New York Daily Advertiser*. A second "coffee manufactory" started up at 232 Queen (also Pearl) Street, New York, late in 1790.

In the same year, 1790, the government increased the import duty on coffee to four cents a pound. In 1794 the tax was raised to five cents a pound.

In George Washington's household account book for 1793 appears an entry showing a purchase of coffee from Benjamin Dorsay, a Philadelphia grocer, for eight dollars. The quantity is not given.

About 1804 Captain Joseph Ropes in the ship Recovery, of Salem, Mass., brought from Mocha the first cargo of coffee and other East Indian produce in an American bottom.

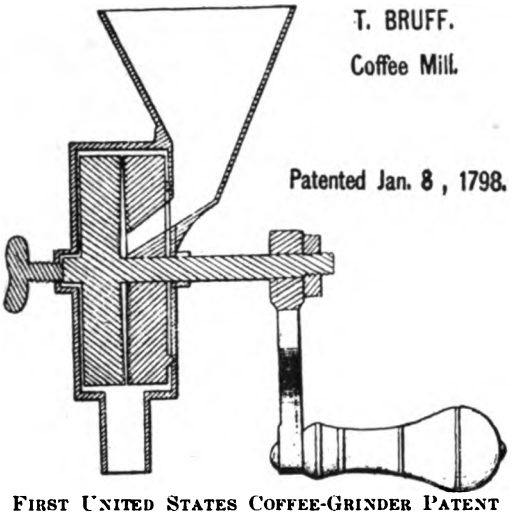
The first cargo of Brazil coffee, consisting of 1,522 bags, was received at Salem, Mass., per ship Marquis de Someruelas in 1809. Brazil's total production that year was less than 30,000 bags; but by 1871 more than 2,000,000 bags were exported.

Java coffee could be bought on the Amsterdam market in 1810 for 42 to 46 cents. By 1812, there had been an advance to $1.08 per pound. Holland, not Brazil, ruled the world's coffee markets in those days.

When the war of 1812 made necessary more revenue, imports of coffee were taxed ten cents a pound. A war-time fever of speculation in tea and coffee followed, and by 1814 prices to the consumer had advanced to such an extent (coffee was 45 cents a pound) that the citizens of Philadelphia formed a non-consumption association, each member pledging himself "not to pay more than 25 cents a pound for coffee and not to consume tea that wasn't already in the country."

The coffee duty was reduced in 1816 to five cents a pound; in 1830, to two cents; in 1831, to one cent; and in 1832 coffee was placed on the free list. It remained there until 1861, when a duty of four cents a pound was again imposed as a war-revenue measure. This was increased to five cents in 1862. It was reduced to three cents in 1871; and the duty was repealed in 1872. Coffee has remained on the free list ever since.

The manufacture of machinery required in the coffee business began in the eighteenth century. The first coffee-grinder patent in the United States was issued to Thomas Bruff, Sr., in 1798. The first United States patent on an improvement on a roaster was issued to Peregrine Williamson of Baltimore in 1820. The first United



FIRST UNITED STATES COFFEE-GRINDER PATENT

States patent on a coffee-plantation machine, a coffee huller, was granted to Nathan Reed of Belfast, Me., in 1822. The first United States coffee-maker patent was issued to Lewis Martelley of New York, in 1825.

Charles Parker, of Meriden, Conn., began work on the original Parker coffee mill in 1828.

A complete English coffee roasting and grinding plant was installed in New York City by James Wild in 1833 - 34.

About 1840, Central America began making shipments of coffee to the United States.

James Carter, of Boston, was granted (1846) a United States patent on an improved form of cylindrical coffee roaster, which subsequently was largely adopted by the trade in the United States, being popularly known as the Carter "pull-out".

The Geo. L. Squier Manufacturing Co. of Buffalo began in 1857 the manufacture of coffee-plantation machinery. Marcus Mason invented his first pulper in 1860; but the manufacture of coffee-plantation machinery under the firm name of Marcus Mason & Co. did not begin in the United States until 1873.

The first paper-bag factory in the United States to make bags for loose coffee, began operations in Brooklyn in 1862.

The first ground-coffee package was put on the New York market about 1860 - 63 by Lewis A. Osborn. It was known as Osborn's Celebrated Prepared Java Coffee and was later exploited by Thomas Reid as Osborn's Old Government Java.

In 1864, Jabez Burns was granted a patent on the Burns roaster which was to revolutionize the coffee-roasting business.

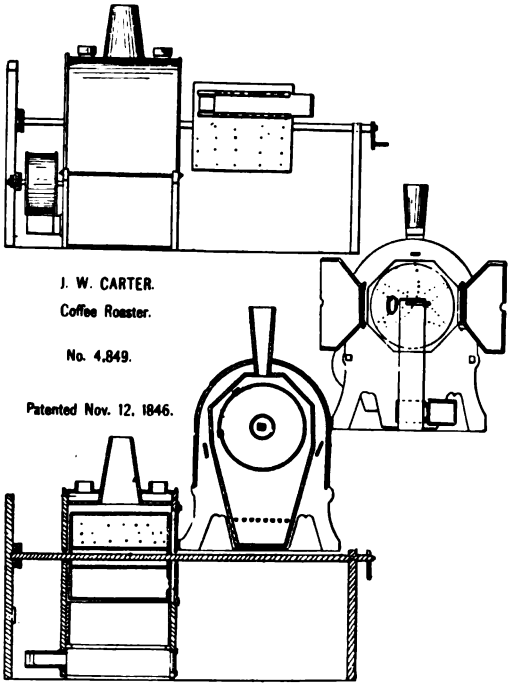
In 1865, John Arbuckle brought out in Pittsburgh the first roasted coffee in individual packages "like peanuts", the forerunner of the Ariosa package.

In 1869, B. G. Arnold started the first big speculation in coffee and for ten years thereafter he was absolute dictator of the American coffee trade.

In 1869, three United States patents on a copper coffee urn lined with block tin were granted to Elie Moneuse and L. Duparquet of New York.

In 1870, John Gulick Baker, one of the founders of the Enterprise Manufacturing Company of Pennsylvania, was granted a United States patent on a coffee grinder which subsequently became one of the most popular store mills.

The first trade mark registered for coffee or coffee essence bears the number 425, with date August 22, 1871, first use 1870, and is in the name of Butler, Earhart & Co., Columbus, Ohio. The words "essence of coffee" appeared on the label. The next coffee mark was registered by Butler, Earhart & Co., October 3, 1871, number 455, first use, 1870. It consists of the word



CARTER'S PULL-OUT ROASTER PATENT

"Buckeye" with a branch of the buckeye (horse-chestnut) tree.

The next registration for coffee was in the name of John Ashcroft of Brooklyn. It is numbered 533, and the date is November 28, 1871. It consists of an anchor and chain enclosing a star. Ashcroft registered also a design of a coffee pot with the words "Mocha Steam", January 2, 1872.

Today there are nearly three thousand registered trade-mark names used for coffee on file in the United States Patent Office in Washington.

In 1873, Ariosa, the first successful national brand of package coffee, was launched in Pittsburg by John Arbuckle.

In the same year, 1873, the first United States patent on a coffee substitute was issued to E. Dugdale of Griffin, Ga.

FIRST REGISTERED TRADE MARK FOR COFFEE, 1871

In 1878, Chase & Sanborn, the Boston coffee roasters, were the first to pack and to ship roasted coffee in sealed cans. A lead seal was used for the large packages of bulk coffee; the smaller sizes being sealed by the label, which was made to cover the body of the can and to reach up over the slip cover, so as to make a sealed package, to open which the label must be broken.

In 1878, Jabez Burns, the coffee-machinery man, founded the *Spice Mill*, the first publication in America devoted to the coffee and spice trades.

In 1879, Charles Halstead brought out the first metal coffee pot with a china interior.

In 1880, Henry E. Smyser, of Philadelphia, invented a package-making-and-filling machine for coffee, the fore-runner of the weighing-and-packing machine, the control of which later on by John Arbuckle led to the coffee-sugar war with the Havemeyers. Smyser was superintendent at the plant of the Weikel & Smith Spice Company, Philadelphia. Other patents on weighing and package-making machines were granted him in 1884, 1888, and 1891. In 1892, he began to assign his patents to Arbuckle Brothers, some fifteen in all being granted him from 1892 to 1898. He died in 1899.

The year 1880 was notable for the many failures in the American coffee trade, as a result of syndicate planting and speculative buying of coffees in Brazil, Mexico, and Central America.

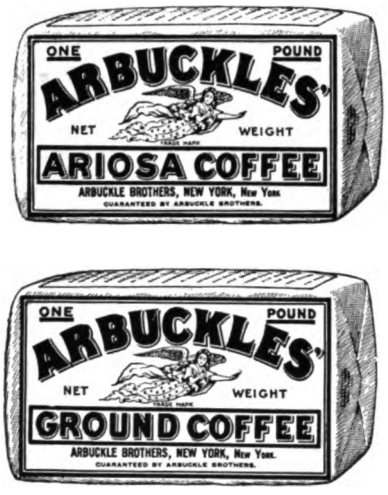
In 1881, Steele & Price, of Chicago, were the first to introduce to the trade all-paper cans, made of strawboard, for coffee.

In 1881, the New York Coffee Exchange was incorporated, beginning business the year following at Beaver and Pearl Streets. In 1885, the property of the Exchange was transferred to the Coffee Exchange of the City of New York, incorporated by special charter.

In 1884, the Chicago Liquid Sack Company brought out the first combination paper and tin-end containers for coffee.

The year 1887 - 88 was marked by a big boom in coffee, the total sales on the Coffee Exchange amounting to 47,868,750 bags. Between July 1886 and June 1887 prices advanced 1,485 points.

In 1888, the Engelberg Huller Company of Syracuse, New York, began the manufacture of coffee-plantation machinery.



THE ORIGINAL ARBUCKLE COFFEE PACKAGES

In 1891, the New England Automatic Weighing Machine Company, Boston, Mass. began the manufacture of machines to weigh coffee into cartons and other packages; and in 1894, installed in the Chase & Sanborn plant at Boston the first automatic weighing machine in the coffee trade. The New England concern was subsequently (1901) succeeded by the Automatic Weighing Machine Company of Newark, N. J.

In 1893, the first direct-flame gas coffee roaster in America (Tupholme's English machine) was installed by F. T. Holmes at the plant of the Potter-Parlin Company, New York.

In 1893, Cirilo Mingo, of New Orleans, was granted a United States patent on a method of aging green coffee to give it the characteristics of green coffee stored in a confined space for a long period. The operation consisted in placing layers of green coffee between dry and wet empty coffee bags, and permitting the beans to absorb eight to ten percent of the moisture in a period extending from six to sixteen hours. This was one of the earliest efforts to mature and age green coffee in the United States.

In 1894, the business of the Pneumatic Scale Corporation, Norfolk Downs, Mass., had its start in Quincy, Mass. where the first pneumatic weighing machine was installed by the Purity Dried Fruits Cleansing Company. In 1895, the Electric Scale Company was organized to build the machines, the subsequent development of this line of packaging machinery for coffee being directed by the Pneumatic Scale Corporation, Ltd., which succeeded it.

In 1895, Adolph Kraut introduced the German-made grease-proof lined paper bags for coffee to the American coffee trade. That same year, Thomas M. Royal, of Philadelphia, began the manufacture in the United States of a fancy duplex-lined paper bag for coffee.

In 1896, natural gas was first used in the United States as a fuel for roasting coffee.

In 1897, Joseph Lambert, Vermont, first introduced to the coffee trade a self-contained coffee roasting outfit without the brick setting required until then.

In 1897, the Enterprise Manufacturing Company of Pennsylvania was the first regularly to employ an electric motor to drive a coffee mill.

The overproduction of coffee began to be so serious a question by 1898, that J.D. Olavarria, a distinguished Venzuelan, proposed a plan for the restriction of coffee cultivation and the regulation of coffee exports from countries suffering from overproduction. In this same year, the bears forced Rio 7's down to four and one-half cents on the New York Coffee Exchange.

In 1898, Edward Norton, of New York, was granted a United States patent on a vacuum process for canning foods, subsequently applied to coffee. Others followed. Hills Brothers, of San Francisco, were the first to pack coffee in a vacuum, under the Norton patents, in 1900. M. J. Brandenstein & Company, of San Francisco, began to pack coffee in vacuum cans in 1914. Vacuum sealing machines to pack coffee under the Norton patents are now made by the Perfect Vacuum Canning Company of New York.

About 1899, Dr. Sartori Kato of Tokio, who had invented a soluble tea in Japan, came to Chicago and produced a soluble coffee (introduced to the consumer in 1901) on which he was granted a patent in 1903. In 1906, G. Washington of New York, an American chemist living in Guatemala City, produced a refined soluble coffee which was put on the United States market three years later. The full story of soluble coffee in America is told in chapter XXXI. (See page 538.)

The first gear-driven electric coffee mill was introduced to the trade by the Enterprise Manufacturing Company of Pennsylvania in 1900.

In 1901, there appeared in New York the first issue of *The Tea and Coffee Trade Journal*, devoted to the interests of the tea and coffee trades.

In 1900-01, Santos permanently displaced Rio as the world's largest source of supply.

In 1901, the American Can Company began the manufacture and sale of tin coffee cans in the United States. In this year Landers, Frary & Clark's Universal coffee percolator was granted a United States patent; and Joseph Lambert, of Marshall, Mich., brought out one of the earliest machines to employ gas as a fuel for the indirect roasting of coffee. It was in 1901, also, that F. T. Holmes joined the Huntley Manufacturing Company, of Silver Creek, N. Y., which began to build the Monitor gas-fired direct-flame coffee roasters.

In 1902, the Coles Manufacturing Company (Braun Company, successor) and Henry Troemner, of Philadelphia, began the manufacture and sale of gear-driven electric coffee grinders.

As a result of the agitation for some way to deal with the overproduction of coffee, the Pan-American Congress, meeting in Mexico City in 1902, called an international coffee congress for New York in the fall of that same year. It met from October 1 to October 30; but at the close, the problem seemed no nearer solution than at the beginning. In 1906, Brazil produced its record-breaking crop of 20,000,000 bags, and the state of São Paulo inaugurated a plan to valorize coffee.

In 1902, the first fancy duplex paper bag made by machinery from a roll of paper was produced by the Union Bag & Paper Corporation. It was of sulphite fiber inside, and glassine outside; a style afterward reversed, so as to have the glassine the inner tube.

In 1902, the Jagenberg Machine Company, Inc. (absorbed by the Pneumatic Scale Corporation in 1921) began the introduction to the trade of the United States of a line of German-made automatic packaging-and-labeling machines for coffee. Subsequently, the Johnson Automatic Sealer Company, Battle Creek, Mich., became well known as manufacturers of a line of automatic adjustable carton-sealing, wax-wrapping machines, package conveyors, and automatic scales. Among other automatic weighers that have figured in the development of the coffee business, mention should be made of The National Packaging Machinery Company's Scott machine. of E. D. Anderson's Triumph, and of Hoepner's Unit System.

In 1903, as a result of overproduction in Brazil, Santos 4's dropped to three and fifty-five hundredths cents on the New York Coffee Exchange, the lowest price ever recorded for coffee.

In 1903, also, there was granted the first United States patent on an electric coffee roaster, the patentee being George C. Lester of New York.

In 1904, green coffee prices on the New York Coffee Exchange were forced up to eleven and eighty-five hundredths cents by a speculative clique led by D. J. Sully.

In 1905, the A. J. Deer Co., Buffalo, N. Y. (now of Hornell, N. Y.) began the sale of its Royal electric coffee mills direct to dealers on the instalment plan, revolutionizing the former practise of selling coffee mills through hardware jobbers.

In 1905, F. A. Cauchois introduced to the trade his Private Estate coffee maker, a filtration device employing Japanese filter paper. Finley Acker, of Philadelphia, obtained a patent the same year on a side-perforation percolator employing "porous or bibulous paper" as a filtering medium.

In 1906, H. D. Kelly, of Kansas City, was granted a United States patent on an urn coffee machine employing a coffee extractor in which the ground coffee was continually agitated before percolation by a vacuum process.

In 1907, P. E. Edtbauer (Mrs. E. Edtbauer), of Chicago, was granted a United States patent on a duplex automatic weighing machine, the first simple, fast, accurate and moderate-priced machine for weighing coffee. Eight others followed up to 1920.

In 1907, the new Pure Food and Drugs Act came into force in the United States, making it obligatory to label all coffees correctly and causing many trade practises to be altered or thrown into the discard. The most important rulings that followed are referred to in more detail in chapter XXIII, telling how green coffees are bought and sold.

In 1908, the Porto Rico coffee planters presented a memorial to the Congress asking for a protective tariff of six cents a pound on all foreign coffees. Hawaii and the Philippines also were to have benefited

THE MERCHANTS COFFEE HOUSE
THE BIRTHPLACE OF OUR UNION
MAY 23, 1774.
THE MERCHANTS COFFEE HOUSE
OCCUPIED THIS SITE FROM ABOUT 1737 UNTIL
DESTROYED BY FIRE, DECEMBER 18, 1804.
HERE MET THE COMMITTEES OF CITIZENS WHO TOOK PROMINENT
PART IN THE STIRRING EVENTS WHICH LED TO THE REVOLUTION.
HERE ALSO WAS DRAFTED BY A SPECIAL COMMITTEE, COMPOSED
OF ISAAC LOW, CHAIRMAN, ALEXANDER McDOUGALL, JAMES DUANE AND
JOHN JAY, OF THE NEW YORK COMMITTEE OF CORRESPONDENCE,
THE EPOCH-MAKING LETTER OF MAY 23, 1774, WHICH WAS DISPATCHED
TO BOSTON AND IN WHICH APPEARS THE FOLLOWING STRIKING SENTENCE:
"FROM A VIRTUOUS AND SPIRITED UNION MUCH MAY
BE EXPECTED, WHILE THE FEEBLE EFFORTS OF A
FEW WILL ONLY BE ATTENDED WITH MISCHIEF AND
DISAPPOINTMENT TO THEMSELVES, AND TRIUMPH TO
THE ADVERSARIES OF OUR LIBERTY."
FROM THIS RESULTED THE FIRST CONGRESS OF
THE UNITED COLONIES OF NORTH AMERICA, HELD
AT PHILADELPHIA, SEPTEMBER 5, 1774.
AMONG OTHER NOTABLE EVENTS THAT TOOK PLACE
IN THE MERCHANTS COFFEE HOUSE WERE:-
A BANQUET TO HIS EXCELLENCY THE PRESIDENT AND THE
HONOURABLE MEMBERS OF CONGRESS BY CHAMBER OF
COMMERCE OF THE STATE OF NEW YORK, FEBRUARY 3, 1785.
RECEPTION TO GENERAL WASHINGTON ON HIS ARRIVAL FOR
INAUGURATION AS FIRST PRESIDENT OF THE UNITED STATES
OF AMERICA UNDER THE NEW CONSTITUTION, BY HIS
EXCELLENCY THE GOVERNOR, OFFICERS OF STATE, HIS HONOUR
THE MAYOR, AND DISTINGUISHED CITIZENS, APRIL 23, 1789.
HERE ALSO WERE HELD EARLY MEETINGS OF
THE FOLLOWING ORGANIZATIONS AND INSTITUTIONS:
THIS TABLET WAS ERECTED BY
THE LOWER WALL STREET BUSINESS MEN'S ASSOCIATION.
MAY 23, 1914.

MERCHANTS COFFEE HOUSE TABLET
Bronze marker, placed May 23, 1914, on the building occupying the site of the old coffee house

by the protection asked for. The Congress failed to grant the planters' prayer. This appeal for protection was repeated in 1921, when the Congress was asked to place a duty of five cents a pound on all foreign coffees.

In 1908, J. C. Prims, of Battle Creek, Mich. was granted a United States patent on a corrugated cylinder improvement for a gas and coal coffee roaster of fifty to one hundred and thirty pounds capacity designed for retail stores. This machine was acquired the year following by the A. J. Deer Company, and was re-introduced to the trade as the Royal roaster.

In 1908, Brazil's valorization-of-coffee enterprise was saved from disaster by a combination of bankers and the Brazil Government. A loan of $75,000,000 was placed, through Hermann Sielcken of New York, with banking houses in England, Germany, France, Belgium, and America. The complete story of this undertaking is told in chapter XXXI.

In 1909, Ludwig Roselius brought to America from Germany the caffein-free coffee which for several years had been manufactured and sold in Bremen under the Myer, Roselius, and Wimmer patent. In 1910, the product was first sold here by Merck & Company under the name of Dekafa, later Dekofa, and in 1914, by the Kaffee Hag Corporation as Kaffee Hag.

In 1911 all-fiber parchment-lined Damptite cans for coffee were introduced to the trade by the American Can Company.

As a result of preliminary meetings of Mississippi Valley coffee roasters held in St. Louis in May and June, 1911, when the Coffee Roasters Traffic and Pure Food Association was organized, a national association under the same name was started in Chicago, November 16 - 17, 1911. The complete story of the growth of this most important coffee trade organization in the United States is told in the next chapter.

In 1912, the United States government, after having examined into the valorization enterprise, brought suit against Hermann Sielcken, *et al.*, to force the sale of valorized coffee stocks held in this country under the valorization agreement.

In October, 1914, the first national coffee week to advertise coffee was promoted by the National Coffee Roasters Association.

Merchants Coffee House Memorial

On May 23, 1914, the Lower Wall Street Business Men's Association unveiled a bronze memorial tablet set in the wall of the nine-story office building occupied by the Federal Refining Company on the southeast corner of Wall and Water Streets, the former site of the Merchants' coffee house. This is the building where *The Tea and Coffee Trade Journal* had its offices for nine years before moving to 79 Wall Street.

Seth Low, introduced by William Bayne, Jr., president of the Lower Wall Street Business Men's Association, gave an interesting sketch of the history of the coffee house. Abram Wakeman, secretary of the

association, spoke, followed by Wilberforce Eames, of the American history division of the New York Public Library.

After the flag that veiled the memorial tablet had been drawn aside, attention was called to a bronze chest which was hermetically sealed, and in which had been placed papers and other documents reflecting the life of New York today. The chest was given over to the keeping of the New York Historical Society, with the understanding that it was not to be opened until 1974, which will be the two-hundredth anniversary of the union of the Colonies.

It was from the Merchants' coffee house that the letter of May 23, 1774, was written in reply to the Committee of Correspondence in Boston. The letter suggested a "Congress of Deputies" from the Colonies, and called for a "virtuous and spirited Union." The coffee house is consequently regarded as the birthplace of the Union.

Recent Activities

A second national coffee week was held in October, 1915, under the auspices of the National Coffee Roasters' Association.

In 1916, the Coffee Exchange of the City of New York changed its name to the New York Coffee and Sugar Exchange, to admit of sugar trading.

In 1916, the National Paper Can Company of Milwaukee first introduced to the trade its new hermetically sealed all-paper can for coffee.

In 1916, Jules Le Page, Darlington, Ind., was granted two United States patents on cutting rolls to cut and not grind or crush corn, wheat, or coffee. This idea was incorporated in the Ideal steel cut coffee mill subsequently marketed by the B. F. Gump Company, Chicago.

In 1918, the World War caused the United States government to place coffee importers, brokers, jobbers, roasters, and wholesalers under a war-time licensing system to control imports and prices.

In 1918, John E. King, of Detroit, was granted a United States patent on an irregular grind of coffee consisting of coarsely grinding ten percent of the product and finely grinding ninety percent.

The most notable event of the year 1919 was the inauguration by the Brazil planters, in co-operation with an American joint coffee trade publicity committee, of the million-dollar campaign to advertise coffee in the United States.

In 1919, as a result of frost damage, and of an orgy of speculation in Brazil, prices for green coffee on the New York Exchange were forced to the highest levels since 1870; and a new high record was established for futures, twenty-four and sixty-five hundredths cents for July contracts.

In 1919, Floyd W. Robison, of Detroit, was granted a United States patent on a process for aging green coffee by treating it with micro-organisms, the product being known as Cultured coffee.

In the spring of 1920, there was held the third national coffee week, this time under the auspices of the Joint Coffee Trade Publicity Committee.

CHAPTER XXX

DEVELOPMENT OF THE GREEN AND ROASTED COFFEE BUSINESS IN THE UNITED STATES

A brief history of the growth of coffee trading — Notable firms and personalities that have played important parts in green coffee in the principal coffee centers — Green coffee trade organizations — Growth of the wholesale coffee-roasting trade, and names of those who have made history in it — The National Coffee Roasters Association — Statistics of distribution of coffee-roasting establishments in the United States

COFFEE trading in the American colonies probably had its beginnings about the middle of the seventeenth century. Tea seems to have preceded coffee as an article of merchandise. Several merchants in the New England and New York settlements imported small quantities of coffee with other foodstuffs toward the close of the seventeenth century.

The early supplies of the green bean were brought from the Dutch East Indies, Arabia, Haiti, and Jamaica. About 1787, the French opened Mauritius and Bourbon to American ships, which then began to bring back coffee and tea to the Atlantic-coast cities. Mocha coffee was being imported direct in American bottoms about 1804. Coffee from Brazil was first imported by the United States in 1809. Central America began shipping coffee to the United States in 1840. The total coffee imports in 1876 were 339,789,246 pounds, valued at $56,788,997, and received chiefly from Brazil, Haiti, British and Dutch East Indies, the West Indies, and Mexico.

New York early became the leading green-coffee market of the country.

There was a number of large importing merchants in New York in 1760, nearly all of whom brought in coffee. Among them were Isaac and Nicholas Gouverneur, Robert Murray, Walter and Samuel Franklin, John and Henry Cruger, the Livingstons, the Beekmans, Lott & Low, Philip Cuyler, Anthony Van Dam, Hugh and Alexander Wallace, Leonard and Anthony Lispenard, Theophylact Bache, and William Walton.

Some early green-coffee prices per pound were as follows:

1683 — 18s. 9d.; 1743 — 5s.; 1746 — 5s.; 1774 — 9s.; 1781[1] — 96s. O. T.; 1782 — 2s. 1d. O. T.; 1783 — 1s.; 1789 — 10 cents.

Leading New York coffee importers in 1786 were Henry Sheaff, on the dock between Burling Slip and the Fly Market; John Rooney, 26 Cherry Street; William Eccles, 10 Hunters Key; Ludlow & Goold, 47 Wall Street; Scriba, Schroppel & Starmen, 17 Queen Street; and William Taylor, Crane Wharf.

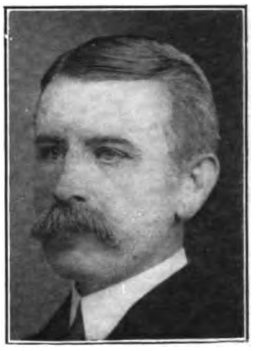
The wholesale coffee roaster appeared about 1790; and from that time the separation between the green-coffee trader and the coffee roaster became more marked. In 1794 the principal green-coffee importers in

[1] About this time, the country was flooded with paper money, worth about 1 to 75, forcing the price of commodities to unheard-of heights, shoes for instance, being sold at £20 per pair.

Hermann Sielcken

B. G. Arnold

F. B. Arnold



Joseph Purcell

SOME DEPARTED DOMINANT FIGURES IN THE NEW YORK GREEN COFFEE TRADE

New York were: Lawrence & Van Zandt; D. Smith & Co., 323 Pearl Street; Gilchrist Dickinson, 17 Taylor's Wharf; Armstrong & Barnewall, 129 Water Street; William Bowne, 265 Pearl Street; Stephen Cole & Son, 26 Ferry Street; J. S. De Lessert & Co., 123 Front Street; Joseph Thebaud, 262 Pearl Street; Nathaniel Cooper & Co., 38 Little Dock Street; Coll. M'Gregor, 28 Wall Street; David Wagstaff, 137 Front Street; Conkling & Lloyd, 15 Taylor's Wharf; and S. B. Garrick, Westphal & Co., 43 Cherry Street.

The leading New York coffee importers in 1848 were Henry and William Delafield, 108 Front Street; and Des Arts & Henser, 78 Water Street.

There were seven leading New York coffee importers in 1854, as follows: Aymar & Co., 34 South Street; Henry Coit & Son, 43 South Street; Henry Delafield, 129 Pearl Street; Howland & Aspinwall, 54 South Street; Mason & Thompson, 33 Pearl Street; J. L. Phipps & Co., 19 Cliff Street; and Moses Taylor & Co., 44 South Street.

Following the so-called "consortium" of 1868, the ramifications of which centered in Frankfort-on-the-Main—its speculations finally ending in disaster to many—the green-coffee trade was in a precarious condition until well into the eighties. "Previously," says a contemporary writer, "it had been the safest and prettiest of all colonial produce."

About 1868, "iron steamers began to be freely availed of as carriers of coffee; and later on, the telegraph became a factor, rendering the business more exciting and expensive".

Coffee consumption in the United States had, moreover, increased from one pound per capita in 1790 to nine pounds per capita in 1882.

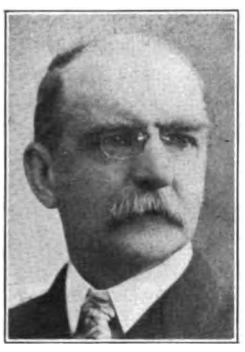
1892 - 93 the biggest figure in the world's coffee trade was George Kaltenbach, a German living in Paris, whose resources were estimated at twelve million to fifteen million dollars, and whose holdings at one time were said to be one million bags. He was reported to have made $1,500,000 on his coffee corner. In September, 1892, he bested a bull clique and forced prices down to twelve cents. Aided by three other European operators, he then started a bull syndicate, and put the price up to seventeen cents. The story of this corner, and of other notable coffee booms and panics, is told in more detail in chapter XXXI.

Early Days of the Green Coffee Business.

For a long time New York was the only important entry port for green coffee. Before the rise of New Orleans and San Francisco, many inland coffee roasters and grocers had their own buyers in the New York market. The coffee district that still clings about lower Wall Street is rich in memories of by-gone merchants who once were big factors in the trade, and whose names, in many instances, have been handed down from generation to generation in the businesses that have survived them.

Any reference to the early days of the green-coffee importing, jobbing, and brokerage business in New York would not be complete without mention of a few of the pioneers:

P. C. Meehan is eighty-four years old at the time of writing (1922) and is dean of



James H. Taylor

H. Simmonds

Edwin H. Peck

P. C. Meehan

THEIR ASSOCIATION WITH THE NEW YORK GREEN COFFEE TRADE DATES BACK NEARLY FIFTY YEARS

the New York green-coffee trade. With James H. Briggs he formed the firm of Briggs & Meehan. This later became Meehan & Schramm, with Arnold Schramm. The latter withdrew, and the firm became Creighton, Morrison & Meehan. Finally, Mr. Meehan established the present firm of P. C. Meehan & Co.

When Mr. Schramm withdrew from the firm of Meehan & Schramm he founded the house of Arnold Schramm, Inc. Upon his retirement, this was succeeded by Sprague & Rhodes, the firm being composed of Benjamin Rhodes and Irvin A. Sprague.

Next oldest to P. C. Meehan in the New York green-coffee trade is Clarence Creighton, who started with Youngs & Amman, later C. Amman & Co., then Waite, Creighton & Morrison, then Creighton, Morrison & Meehan. Upon the breaking up of this firm, Mr. Creighton formed a partnership with James Ashland, under the name of Creighton & Ashland. He later operated alone, and died August 15, 1922.

James H. Taylor is another "old-timer" who is still active. He began with T. T. Barr & Co. Later, with F. T. Sherman, he formed the firm of Sherman & Taylor. When Mr. Sherman withdrew, the firm became James H. Taylor & Co. Mr. Taylor is now with Minford, Lueder & Co. He has been five years president, eleven years treasurer, and twenty-six years on the board of governors of the New York Coffee Exchange.

One of the most honored names in the green coffee trade of New York is that of Peck. Edwin H. Peck began, at the age of seventeen years, with Hart & Howell, butter and cheese merchants. He then went in the same business for himself. Four years later, he abandoned this to go into the coffee brokerage business with his brother, Walter J. Peck. In about five years, the brothers branched into the coffee importing and jobbing business under the firm name of Edwin H. Peck & Co. Later it was changed to the present style of E. H. & W. J. Peck. Since the death of Walter J. Peck in 1909, Edwin H. has conducted the business. The latter was a member of the board of governors of the New York Coffee Exchange for twelve years, and has been an important factor in the upbuilding of that institution.

William D. Mackey began with Small Bros. & Co. He then went into partnership with C. K. Small as Mackey & Small. Later, he formed the firm of Arnold, Mackey & Co. with Francis B. Arnold. The latter dropped out, and the firm became Mackey & Co. He is now operating alone. Mr. Mackey was another of the incorporators of the New York Coffee Exchange.

Alexander H. Purcell, a brother of Joseph Purcell, entered the employ of Bowie Dash & Co. as a boy. From there he went to Williams, Russell & Co., then to the Union Coffee Co., and later to Hard & Rand. He is now head of the firm of Alex. H. Purcell & Co.

Robert C. Stewart first became known with Booth & Linsley. He later went with Joseph J. O'Donohue & Sons, leaving there to establish the present firm of R. C. Stewart & Co.

Another old-timer, Joseph D. Pickslay, may be seen at his desk in Williams, Russell & Co.'s office every day, although Frank Williams, who began with Win-

throp G. Ray & Co., and Frank C. Russell, both of Williams, Chapin & Russell, and then of Williams, Russell & Co., have passed on. Fred P. Gordon, now head of Fred P. Gordon & Co., was formerly with Williams, Russell & Co.

The Mitchell brothers, William L. and George, forming the firm of Mitchell Bros., have been familiar Front Street figures for many years.

A. Wakeman, "the historian of the coffee trade," as he is often called, began with Olendorf, Case & Gillespie. Later he went with Thompson & Bowers, and then became a member of the firm of Baiz & Wakeman. He is now in business alone. For thirty-eight years Mr. Wakeman has been secretary of the Lower Wall Street Business Men's Association. He is the author of *History and Reminiscences of Lower Wall Street and Vicinity.*

H. Simmonds, of Simmonds & Bayne; later, of Simmonds & Newton; then, of the Brazil Coffee Co.; and finally, of H. Simmonds & Co., is at the time of writing one of the oldest coffee merchants on Front Street, having been in business in Baltimore and New York for more than fifty years. He has a desk in the office of his son, W. Lee Simmonds, of W. Lee Simmonds & Co.

Bayne is another well known Front Street name. The firm of William Bayne & Co. was established by William Bayne, Sr., in Baltimore. The business was moved to New York about 1885. The founder's three sons, William, Jr., Daniel K., and L. P., entered the employ of the firm in Baltimore, and moved with it to New York. Daniel K. Bayne became associated with Henry Sheldon & Co., and later was a member of Simmonds & Bayne. He then returned to William Bayne & Co. and was senior partner at the time of his death in 1915. William Bayne, Jr., for many years one of the governors and a past-president and vice-president of the New York Coffee Exchange, and his brother, L. P. Bayne, now conduct the business.

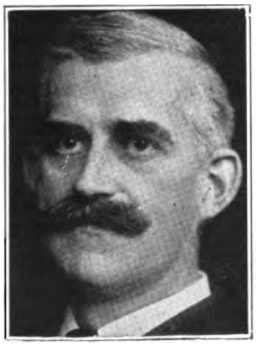
John T. Foley, now of the Commercial Coffee Co., began with Kirkland Bros. From there he went to Ezra Wheeler & Co., then to H. W. Banks & Co., Thompson, Shortridge & Co., and William Hosmer Bennett & Son.

Joshua Walker formed a partnership with James Stewart as Stewart & Walker. Since the retirement of Mr. Stewart some years ago, Mr. Walker has been in business alone.

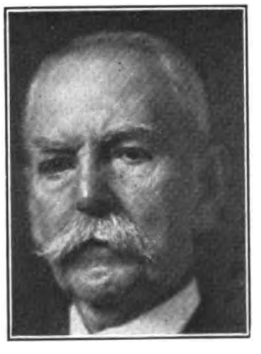
Three other veterans of the trade are still in the harness: Louis Seligsberg, formerly of Wolf & Seligsberg, is now alone; Henry Schaefer has been at the head of S. Gruner & Co. since the death of Siegfried Gruner; Col. William P. Roome, who operated for some time as Wm. P. Roome & Co., is now head of the coffee department of Acker, Merrall & Condit Co.

Gregory B. Livierato, who founded the business of Livierato Bros. at Port Said, with branches at Aden and Marseilles, and later at Hodeida and Harar, entered the green coffee trade of New York in 1855, although his L F Mocha marks had been introduced here many years before. He remained here for eighteen years, returned to his home in Cephalonia, Greece, in 1904,

O. G. Kimball
Boston



James C. Russell
New York



James W. Phyfe
New York

C. E. Bickford
San Francisco

GREEN COFFEE TRADE BUILDERS WHO HAVE PASSED ON

and died there in 1905. His nephew, B. A. Livierato, then assumed charge of the New York coffee business, which in 1913 became the Livierato-Kidde Co., with B. A. Livierato and Frank Kidde.

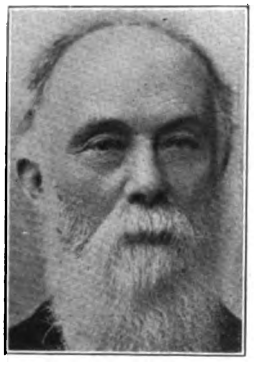
Benjamin Green Arnold, one-time "coffee king," first became well known as a member of Arnold, Sturgess & Co., afterward B. G. Arnold & Co. Mr. Arnold was one of the incorporators, and the first president, of the New York Coffee Exchange. Francis B. Arnold, with Arnold, Sturgess & Co., later of Arnold, Mackey & Co., afterward Arnold, Dorr & Co., was a son of Benjamin Greene Arnold; and to him and to Major John R. McNulty belongs a great part of the credit for the organization of the New York Coffee Exchange. Major McNulty was with Minford, Thompson & Co., and then formed the firm of J. R. McNulty & Co.

Bowie Dash, a member of the famous Arnold-Kimball-Dash triumvirate, began with Scott & Meiser, later Scott, Meiser & Co., then Scott & Dash, afterward Scott, Dash & Co., and finally Bowie Dash & Co. Other well known men with this last company were L. F. Mason, A. C. Foster, S. L. Swazey, L. J. Purdy, and John B. Overton.

Then there were: Rufus G. Story; Thomas Minford, Francis Skiddy, and George J. Nevers, of Skiddy, Minford & Co.; W. D. Thompson, of Minford, Thompson & Co., later L. W. Minford & Co., afterward Minford, Lueder & Co., Thompson, Shortridge & Co., later Thompson Bros., then Thompson & Davis; John Randall, with L. W. Minford & Co., later with J. C. Runkle & Co.; Eugene and James O'Sullivan of Eugene O'Sullivan & Co.

The following names figured prominently in the trade's early history: Charles Maguire, of James H. Taylor & Co.; George F. Gilman, organizer of the Great American Tea Co. and of the Great Atlantic & Pacific Tea Co.; H. W. Banks, of Reeve, Case & Banks, afterward of Stanton, Sheldon & Co., later Sheldon, Banks & Co., and then of H. W. Banks & Co.; Henry Sheldon, of Stanton, Sheldon & Co., later Sheldon, Banks & Co.; and then Henry Sheldon & Co.; William McCready, with Small Bros. & Co., later with H. W. Banks & Co., and then with B. H. Howell, Son & Co., C. R. Blakeman, with Gross, March & Co., afterward with Wm. Scott's Sons & Co.; William Scott, of William Scott & Sons, later Wm. Scott's Sons & Co., including George W. Vanderhoef, who later succeeded to the business under the name of George W. Vanderhoef & Co.; Christopher and Leander S. Risley, of C. Risley & Co.; and Charles Naphew, with C. Risley & Co., later with Edwin H. Peck & Co.

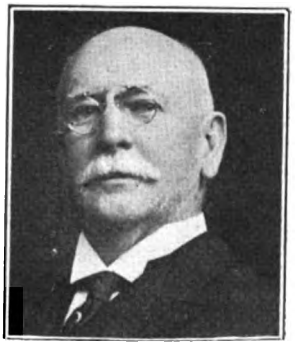
Another group of old-timers includes: William Newbold, with Ezra Wheeler & Co., later alone; Augustus Ireland, with Ezra Wheeler & Co.; J. M. Edwards, of Edwards & Maddux, later of J. M. Edwards & Co.; Frank M. Anthony, of J. M. Edwards & Co.; H. Clay Maddux, one of the incorporators of the New York Coffee Exchange, of Edwards & Maddux; Baron Thomsen, of Thomsen & Co.; Gustave Amsinck, of G. Amsinck & Co.; James N. Jarvie, with Small Bros. & Co., later of Ar-



William Bayne
New York

George W. Crossman
New York

George Westfeldt
New Orleans



Wm. H. Bennett
New York

THEIR RACE IS RUN, THEIR COURSE IS DONE

112 FRONT STREET, NEW YORK, IN 1879

A group of oldtime green coffee men, including R. C. Stewart, J. D. Pickslay, Frank Williams, Charles P. Chapin, and Fred P. Gordon

buckle Bros.; John C. Lloyd, of John C. Lloyd & Co., afterward with Arbuckle Bros.; John Small, of Smalls & Bacon, later Small Bros. & Co.; Williamson Bacon, of Smalls & Bacon, afterward of Williamson Bacon & Co.; C. K. Small, of Mackey & Small, Anson Wales Hard and George Rand, of Hard & Rand; Joseph Purcell, first of W. J. Porter & Co., and then of Hard & Rand; Henry F. McCreery, with O'Shaughnessy & Sorley, later of Hard & Rand; William Sorley and John W. O'Shaughnessy, of O'Shaughnessy & Sorley, Mr. O'Shaughnessy later forming John W. O'Shaughnessy & Co., and Mr. Sorley going to Hard & Rand. Mr. Sorley was one of the incorporators of the New York Coffee Exchange.

Special mention should be made of: Kirkland & von Sacks; A. Kirkland, one of the incorporators of the New York Coffee Exchange, with Small Bros. & Co., then with W. J. Kirkland as Kirkland Bros., and, upon the dissolution of that firm, with F. H. Leggett & Co.; Thomas Rutter & Co.; Teacle Wallace Lewis, with Rowland, Humphreys & Co., later head of the coffee department of Carter, Macy & Co., and still later, head of T. W. Lewis & Co.; Abraham Sanger, of Sanger, Beers & Fisher, later Sanger & Wells; J. W. Wilson & Co.; Dykes & Wilson; Peter, John, and Joseph J. O'Donohue, of John O'Donohue's Sons; Joseph J. O'Donohue & Sons; Otis W. Booth, of Booth & Linsley; A. G. Hildreth; James H. Kirby, of B. G. Arnold & Co., later of Kirby, Halstead & Chapin, afterward Kirby & Halstead; Major Henry D. Tyler; Thomas H. Messenger & Co.; Harvey H. Palmer, of H. H. Palmer & Co.; B. O. Bowers, of Wilson & Bowers, later Thompson & Bowers; and August Haeussler, first with C. Risley & Co., then with J. H. Labaree & Co., and finally with the green coffee department of Geo. H. McFadden & Brother.

John Hanley, with Carey & Co., later of Hanley & Kinsella, St. Louis; Robert C. Hewitt, Jr., who wrote one of the early books on coffee (*Coffee, its History, Cultivation, and Uses,* 1872), of Hewitt & Phyfe, later Jas. W. Phyfe & Co.; James W. Phyfe of Hewitt & Phyfe, later Jas. W. Phyfe & Co.; Daniel A. Shaw, of Jas. W. Phyfe & Co.; B. Lahey, of Jas. W. Phyfe & Co.; and Winthrop G. Ray & Co.

These names, too, will live long in green coffee history: Reid, Murdock & Fischer, New York and Chicago; Charles A. and Watts Miller, and David Palmer, of D. J. Ely & Co., formerly D. J. & Z. S. Ely Co., New York and Baltimore; Harry Miller, with D. J. Ely & Co., later of Miller & Walbridge; Augustus Walbridge, of Smith & Walbridge, afterward Augustus M. Walbridge, Inc.; Clarence Smith, of M. V. R. Smith's Sons, later of Smith & Walbridge; Stevens, Armstrong & Hartshorn, later Stevens & Armstrong, then Stevens Bros. & Co., and finally Reamer, Turner & Co., including Abraham Reamer, Sr., and William F. Turner.

Other familiar old-time names were: George W. Pritchard, of George W. Pritchard & Sons; Dayton & Co.; Dimond &

AT 87 WALL STREET, N. Y., YEARS AGO

Among the green coffee men in this picture are Clarence Creighton, John Enright, Chris Arndt, W. Lee Simmonds, John Ashlin, F. Loderose, Julius Steinwender, and Clinton Whiting

WALL AND FRONT STREETS, NEW YORK, SPRING OF 1922

Looking up Wall Street from the East River. The first cross street is Front; beyond are to be seen the Munson, Stock Exchange, and Bankers' Trust Company's buildings, with Trinity Church marking the Broadway gateway

Lally, later Dimond & Gardes; Arthur W. Brown; Robert Russell, of Russell & Co.; J. F. Pupke and Thomas Reid, of Pupke & Reid, later Eppens, Smith & Wiemann, afterward Eppens, Smith & Co., with William H. and Frederick P. Eppens; Joseph A. O'Brien, with Pupke & Reid, and later in business for himself; R. P. McBride, of the Union Pacific Tea Co.; Ripley Ropes; Saportas Bros.; Mayer Bros. & Co. of Hamburg, with Moses G. Hanauer, manager, and D. K. Young and Herman Hanauer, salesmen; H. M. Humphreys, with J. W. Doane & Co., later with Arbuckle Bros.; Henry Nordlinger, of Henry Nordlinger & Co.; Charles Campbell, of W. R. Grace & Co.; D. A. DeLima, of D. A. & J. DeLima, later D. A. DeLima & Co.; Henry Kunhardt and George F. Kuhlke, of Kunhardt & Co.; Boulton, Bliss & Dallett, later Bliss, Dallett & Co., general managers of the Red D line of steamships; Prendergast Bros.; W. H. and George W. Crossman, of W. H. Crossman & Bros., later Crossman & Sielcken, with Hermann Sielcken, afterward Sorenson & Nielson; F. Probst & Co.; H. H. Swift & Co.; J. L. Phipps & Co.; James Bennett and Joseph Becker, of Bennett & Becker; and Arnold, Hines & Co. (Diamond A Mocha), later Arnold, Cheney & Company.

Honorable mention should be accorded: Samuel Wilde (Old Dutch Mills); John Phoenix, with Husted, Ferguson & Titus, later of J. W. Phoenix & Co.; H. K. Thurber, of H. K. & F. B. Thurber & Co.; Michael Barnicle, with Walter Storm, later Storm, Smith & Co., then Abbey, Freeman & Co., then with Husted, Wetmore & Titus, and finally alone; August Stumpp, of August Stumpp & Co.; J. K. and E. B. Place; Beards & Cummings, later Beards & Cottrell, then S. S. Beard & Co.; Philip and Henry Dater, of Philip Dater & Co.; Hugh Edwards, of Edwards & Raworth; William Bennett, of Wm. Hosmer Bennett & Son; Kalman Haas, of Haas Bros.; J. C. Runkle & Co.; Thomas T. Barr and Fred T. Sherman, of Barr, Lally & Co., later T. T. Barr & Co.; Henry Hentz & Co.; Elmenhorst & Co.; A. S. Lascelles & Co.; D. Henderson (Harry) and John Wells, of Wells Bros.; G. Weyl & Co., later Norton, Weyl & Beven, and then Weyl & Norton; Warren & Co.; J. H. Labaree & Co.; Schultz & Ruckgaber; Henry Eyre; Rowland, Terry & Humphreys, later Rowland & Humphreys; Bentley, Benton & Co.; Winter & Smilie; Weston & Gray; John S. Wright, one of the incorporators of the New York Coffee Exchange, of Wright, Hard & Co.; Watjen, Toel & Co.; A. Behrens & Co.; "Steve" Matheson, of S. Matheson, Jr. & Co.; C. Wessels & Bros., later Wessels, Kulenkampff & Co., and finally Fromm & Co.; Julius Steinwender, of Steinwender, Stoffregen & Co.; Leon Israel, of Leon Israel & Bros.; Herklotz, Corn & Co.; Ponfold, Schuyler & Co.; Maitland, Phelps & Co., later Maitland, Coppell & Co.; F. H. Leggett, of F. H. Leggett & Co.; Carhart & Brother; George W. Flanders, of George W. Flanders & Co.; Jonas P. O'Brien; George S. Wallen, of George S. Wallen & Co.; Charles F. Blake, of Blake & Bullard; and Martin J. Glynn, of McDonald & Glynn , later Martin J. Glynn & Co., who had their office at Front Street and Old Slip for twenty-five years.

Three other names closely associated with the early days of the New York green-coffee trade were: Glover, Force & Co., later Waterbury & Force, then W. H. Force & Co., and finally W. S. Force & Co., weighers and forwarders; Daniel Reeve, of Reeve & Van Riper, mixers and hullers; and John H. Draper & Co., auctioneers.

Growth of the Leading Coffee Ports

Twenty-two years ago, when the century opened, New York passed over her docks a total of 676,000,000 pounds of coffee, which represented eighty-six percent of the total for the country. In 1920, juggling the figures a little, she imported 767,000,000 pounds, which was fifty-nine percent of the total. While she was thus practically marking time, she watched New Orleans run wild with an increase from 44,000,000 pounds to 380,000,000 pounds, or 763 percent gain; this meaning also the supplying of twenty-nine percent of the country's demands instead of five percent, while San Francisco in the same time jumped from 24,000,000 pounds to 137,000,000 pounds, or 470 percent gain, her share of the total trade now being ten percent instead of three percent in 1900. These gains, however, have not all been made at the expense of the city on the Hudson. In 1900, Baltimore was a close rival of New Orleans and was far ahead of all other ports except New York; but a decline in her imports began

LOOKING SOUTH FROM WALL STREET INTO THE HEART OF THE GREEN COFFEE DISTRICT
On the left-hand corner is Hard & Rand's, opposite Leon Israel & Bros.' building, and beyond are many other leading green coffee firms.

LOOKING NORTH FROM WALL STREET. HERE A FEW WELL KNOWN COFFEE FIRMS ARE LOCATED
The trend of the trade is south from Wall St. rather than north

FRONT STREET, NEW YORK'S GREEN COFFEE DISTRICT, IN 1922

IMPORTS OF COFFEE AT LEADING PORTS OF ENTRY IN THE UNITED STATES

	New York *Pounds*	New Orleans *Pounds*	San Francisco *Pounds*	Total imports *Pounds*
1900	676,227,269	44,335,717	24,562,578	787,991,911
1913	554,571,449	263,382,962	36,067,073	863,130,757
1914	633,400,209	308,008,145	46,721,824	1,001,528,317
1915	758,160,133	307,868,932	45,844,060	1,118,690,524
1916	814,394,074	308,513,290	71,346,788	1,201,104,485
1917	932,098,113	274,989,692	97,821,069	1,319,870,802
1918	779,025,781	219,330,461	134,729,019	1,143,890,889
1918*	757,710,001	146,621,857	130,178,288	1,052,201,501
1919*	804,177,446	356,608,477	160,426,467	1,333,564,067
1920*	767,242,636	380,293,701	137,043,281	1,297,439,310
1921*	790,559,919	331,036,770	139,069,286	1,340,979,776

*Calendar years. All others fiscal years.

about 1903, and was so swift, that five years later her imports were almost negligible.

New Orleans began her advance at about the same time that Baltimore began to fall off, so that her rise to a place of importance as a coffee port has been practically coincident with the twentieth century. Her first big step upward was in 1901, from 44,000,000 to 72,000,000 pounds, and was followed by another the next year to 115,000,000. Thereafter there was a steady gain to 213,000,000 pounds in 1906 and to 301,000,000 pounds in 1910, and after that wide fluctuations, especially during the war. In 1918, doubtless because of the draining of shipping to the North Atlantic service, there was a heavy slump; but immediately after the war, in the calendar year 1919, there was a big jump to a record mark, up to that time, of 356,000,000 pounds. This was followed by the record of 380,000,000 pounds in the calendar year 1920, although the 1921 figure of 331,036,770 shows a falling off of nearly 50,000,000 pounds.

San Francisco's growth, on the other hand, is of recent occurrence. The story is told farther along in this chapter, how the city was definitely placed on the coffee map by the provision of adequate shipping facilities to Central America. The outbreak of the war in Europe, however, which loosened the grip of European nations on the coffee crops of Central America, was the prime cause of San Francisco's rise in the coffee world, affording her an opportunity of which she had the enterprise to take full advantage. In 1913, her imports were only about 36,000,000 pounds, at which mark they had stood for many years. There was only a slight gain until 1916, when 71,000,000 pounds were recorded; but this increased to 97,000,000 pounds in 1917, to 134,000,000 pounds in 1918 (fiscal year), and to 160,000,000 pounds in the calendar year 1919. In 1920, there was a falling off to 137,000,000 pounds, and it may be that the high figure reached the year before represents about the maximum that her natural market, the Pacific-coast region, can well absorb.

For the benefit of those who like to do their own interpreting of figures, we present in the table at the top of this page the official record for recent years.

The leading importers of Brazil coffee direct to New York and Baltimore in 1894, as compiled by William H. Force & Co., were as follows. Included in this list are a number of names well known in the green and roasted coffee trades of other cities:

DIRECT IMPORTERS OF BRAZIL COFFEE
New York, 1894

	Bags
Arbuckle Bros.	688,726
W. H. Crossman & Bro.	355,864
Hard & Rand	345,541
W. F. McLaughlin & Co.	227,935
J. W. Doane & Co.	207,170
Steinwender, Stoffregen Co.	132,482
J. L. Phipps & Co.	54,617
Dannemillers & Co.	49,449
E. Levering & Co.	47,322
Aug. Stumpp	44,959
Thomson & Taylor Spice Co.	44,017
G. Amsinck & Co.	38,350
E. H. & W. J. Peck	33,278
J. H. Labaree & Co.	32,071
Fitch & Howland	31,515
Shinkle, Wilson & Kreis Co.	25,951
C. D. Lathrop & Co.	23,263
Taylor & Levering	21,501
Heinrich Haase	18,976
William T. Levering	18,796
T. G. Lurman & Co.	18,017
Elmenhorst & Co.	16,221

Sprague, Warner & Co.	14,856
Sorver, Damon & Co.	14,675
Sutton & Vansant	13,957
John O'Donohue's Sons	13,681
Hoffman, Lee & Co.	13,598
S. R. Alexander	12,805
Eppens, Smith & Wiemann Co.	12,719
Baker & Young	11,906
Hanley & Kinsella C. & S. Co.	11,318
Durand & Kasper Co.	11,124
Wm. Schotten & Co.	11,005
C. G. Bullard & Co.	10,653
H. W. Banks & Co.	10,351
Ellis Bros.	10,282
Jacob Baiz	9,146
A. Lueder & Co.	8,492
C. F. Pitt & Sons	8,262
G. F. Gillman	7,927
Bell, Conrad & Co.	6,528
N. Martin & Co.	6,507
J. B. O'Donohue & Co.	6,102
Steele, Wedeles Co.	5,700
G. O. Gordon	5,550
Sherman Bros. & Co.	4,998
F. MacVeagh & Co.	4,763
Benedict & Co.	4,717
Chase & Sanborn	4,505
West & Melchers	4,500
Mokaska Mfg. Co.	4,013
Haebler & Co.	4,000
Robt. Crooks & Co.	3,509
M. M. Levy & Co.	3,037
J. A. Tolman Co.	3,004
Tracy & Avery Co.	3,000
Wells Bros.	2,800
Kirby, Halsted & Chapin Co.	2,754
W. M. Hoyt Co.	2,252
Gt. A. & P. Tea Co.	2,250
Foote & Knevals	2,000
L. W. Minford & Co.	1,800
Wm. Bayne & Co.	1,755
Indiana Coffee Co.	1,650
W. K. Carson & Co.	1,501
Miller, Smith & Co.	1,500
Rufus Woods	1,498
J. G. Flint	1,345
Davenport & Morris	1,250
Canada	1,140
Westfeldt Bros.	1,000
Edw. Westen T. & S. Co.	800
Corbin, May & Co.	750
F. Cannon & Co.	618
Adam Roth Gro. Co.	500
Scudder, Gale Gro. Co.	500
J. H. Taylor & Co.	500
Wm. B. Willson	500
Dwinell, Wright & Co.	500
Swift, Billings & Co.	500
New Orleans Coffee Co.	500
B. Fischer & Co.	401
Smith & Schipper	300
Ulman, Lewis & Co.	281
Ridenour, Baker Gro. Co.	250
W. H. Minor	250
Nave & McCord Merc. Co.	202
Skiddy, Minford & Co.	196
Rossbach & Bro.	184
L. Wolff	149
Reimers & Meyer	50
W. F. Jackson	5
Total	2,791,642

DIRECT IMPORTERS OF BRAZIL COFFEE
Baltimore, 1894

	Bags
E. Levering & Co.	40,965
T. G. Lurman & Co.	29,325
C. M. Stewart & Co.	25,499
Thornton Rollins	21,436
William T. Levering	15,884
Steinwender, Stoffregen	12,852
W. B. Willson	11,540
Hoffman, Lee & Co.	8,953
Rufus Woods	8,020
P. T. George & Co.	7,463
Taylor & Levering	6,440
Benedict & Co.	5,434
Brazil Trading Co.	2,666
C. F. Pitt & Sons	2,505
J. W. Doane & Co.	2,509
Enterprise Coffee Co.	1,811
H. M. Wagner & Co.	504
C. D. Lathrop & Co.	503
Mokaska Manufacturing Co.	500
Hanley & Kinsella C. & S. Co.	500
Shinkle, Wilson & Kreis Co.	404
G. Amsinck & Co.	400
Indiana Coffee Co.	251
Total	206,355

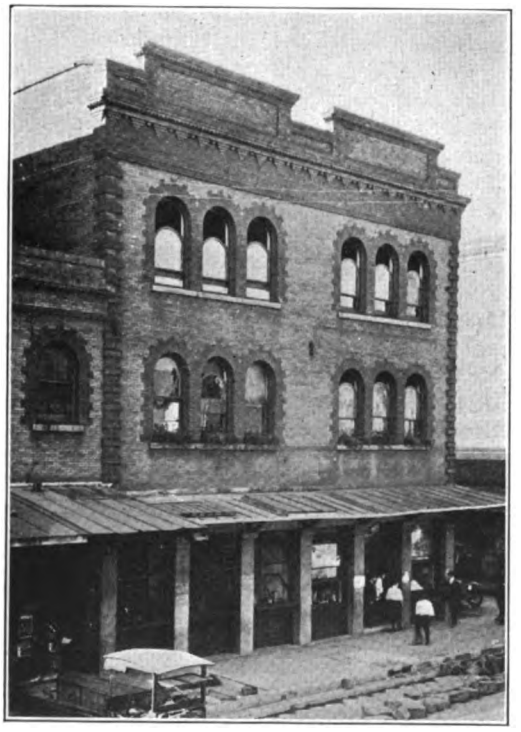
Early Days of Green Coffee in New Orleans

The history of New Orleans as a coffee port may be considered as beginning with the transfer of Louisiana by Napoleon Bonaparte to the United States in 1803. In this year, according to Martin's *History of Louisiana,* New Orleans imported 1438 bags of coffee of 132 pounds each. In the latter part of the eighteenth century, settlers in large numbers had crossed the Allegheny Mountains from the Atlantic states into the valley of the Ohio River; and their crops of grain and provisions were exported by means of cheaply constructed rafts and boats, which were floated down the river to New Orleans, where they were generally broken up and sold for use as lumber and firewood — there being, at that time, no power available for propelling them back against the current of the river.

From 1803 until 1820, on account of the difficulty of navigating upstream, New Orleans imports did not increase as rapidly as exports. In 1814, however, the first crude steamboat had begun to carry freight on the river; and by 1820, the supremacy of New Orleans as the gateway of the Mississippi Valley had been for the time established by this new means of transportation. The coffee-importing business flourished; and, from its modest beginning in 1803, grew to 531,236 bags in 1857.

By this time, however, New Orleans had begun to feel the competition of the Erie Canal, and of the systems of east and west railroad lines which had been in the course of active construction during the preceding fifteen years. The railroad systems which had as their ports Boston, New York, Philadelphia, and Baltimore, entered upon a desperate war of freight rates, each in the endeavor to establish the supremacy of its own port. As the building of railroads had been entirely east and west, and no large amount of capital had been invested in north and south lines, much of the business of the valley was diverted to the Atlantic ports, apparently never to return to New Orleans.

In 1862, on account of the blockade of the port, not a bag of coffee was imported through New Orleans, and practically none came in until the year 1866, when the small amount of 55,000 bags was the total for the year. At about this time, Boston and Philadelphia became negligible importing quantities; the business of Baltimore continued to be quite prosperous; and New York rapidly increased her imports and took the commanding position.



IN THE NEW ORLEANS COFFEE DISTRICT

New Orleans had increased her coffee imports to 250,000 bags in 1871, and the yearly imports continued at about this figure until the last decade of the century, when the business began to expand. The imports had reached a total of 337,000 bags in 1893-1894; and of 373,000 in 1896-97. This was the beginning of a new era, and the coffee business of New Orleans entered upon the period of its greatest growth. Imports were 514,000 bags in 1900-01, and were slightly more than twice that by 1903-04. In 1909-10 the imports had again doubled, and had reached a total for the twelve months ending July 1, 1909, of slightly more than 2,000,000 bags; while the figures for the calendar year 1909 totaled 2,500,000 bags.

Borino & Bro., 77 Gravier Street, were the largest importers of coffee in New Orleans in 1869. The principal importers in 1880 were P. Poursine & Co., Westfeldt Bros., Dymond & Gardes, Schmidt & Ziegler, J. L. Phipps & Co., Geo. O. Gordon & Co., and Smith Bros.

Shipments were by sailing vessels, a full cargo being about 5000 bags. Fancy grades, like Golden Rios, washed and peaberries, were shipped in double bags. Musty coffees were common, and every bag in a cargo was sampled for must. S. Jackson was first to issue regular manifests. With the entry of steamers into the coffee transport business, New Orleans was placed at a disadvantage as steamer rates were about twenty cents a bag higher to New Orleans than to New York, and imports were limited. The subsequent revival of the business was due largely to Hard & Rand. Being unable to obtain steamer rates equal to those quoted in New York, Hard & Rand chartered steamers for New Orleans; and soon the trade began to offer cost and freight to New Orleans, and the business grew from about 350,000 bags of green coffee per annum to 2,500,000 bags.

One of the best remembered names in the green coffee trade of New Orleans is that of Charles Dittman (1848-1920), who for nearly fifty years was one of the leading coffee commission merchants of the country. Mr. Dittman entered the coffee business with Napier & Co., representing E. Johnston & Co., of Rio de Janeiro. In 1875, upon the death of Mr. Napier, the firm changed to Johnston, Gordon & Co., later to G. O. Gordon, and in 1886 to the Charles

A SECTION OF THE GREEN COFFEE DISTRICT OF NEW ORLEANS

Most of the buildings shown here are occupied by green coffee importing houses. The one on the right with the balconies is the old Board of Trade Building

Dittmann Co. Since his death in 1920, the business has been continued by F. V. Allain and Charles Dittmann, Jr.

Green Coffee in San Francisco

In the early days of the green coffee business in San Francisco these names stood out as most important among the coffee importers: Hellmann Bros. & Co., Montealegre & Co., E. L. G. S. Steele & Co., and Urruella & Urioste.

From their many friends in Central America, they, and others in their line, obtained small consignments that were bought by the roasters according to their immediate needs. Often as many as five or six buyers would share in a parcel of fifty bags, as they were not in the custom of filling up the larder for days of want. There always seemed to be sufficient for every one, and bull movements and corners had not then become the vogue.

Just as today, the mainstays of the early San Francisco trade were coffees produced in Costa Rica, Salvador, and Guatemala, although some were brought from the Colima district of Mexico. The broker had a comparatively easy job in selling his wares. Samples of the lots would be given to him in carefully sealed glass bottles, and usually the buyer would trust his discerning eye to judge correctly the quality of the goods, not even taking the trouble to uncork the bottle. Size, color, and imperfections would be his criterion.

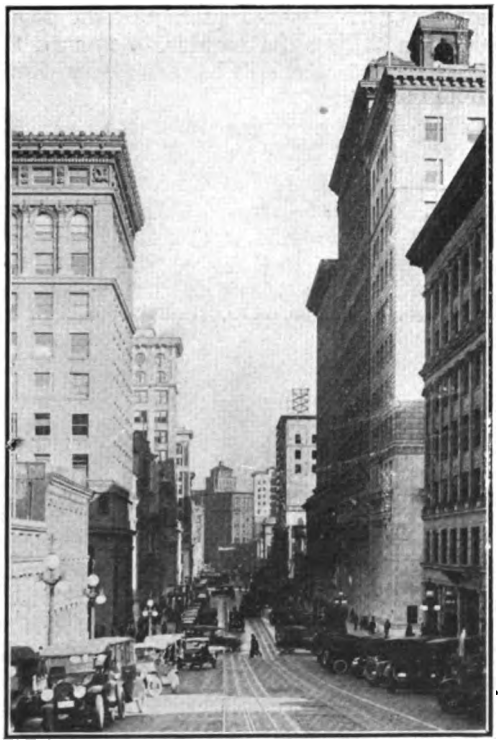
The leading coffee importers at San Francisco in 1875 were B. E. Auger & Co., 409 Battery; S. A. Carit & Co., 405 Front Street; Hellman Bros. & Co., 525 Front Street; Adolphe Low & Co., 208 California Street; S. C. Merrill & Co., 204 California Street; Parrott & Co., 306 California Street; and Urruella & Urioste, 405 Front Street.

The annual consumption of green coffee in San Francisco in the early eighties was estimated at 100,000 bags.

A marked change in the coffee business of San Francisco was brought about by the discovery that the differences in the taste of coffees could not be accurately detected from their color or from the size of bean. To Clarence E. Bickford belongs the credit of having discovered the cup qualities of high-grown Central American coffees. He was employed at the time by a broker named Hockhofler, and probably did not realize what far-reaching effect his discovery would have on the future of San Francisco's coffee trade; but no other factor has

contributed so much to its growth. When the roasters began to examine coffees for their taste, values were of course revolutionized. Antiguas, and other high-grown coffees, that had theretofore been penalized for the small size of bean, soon brought a premium, and have ever since been in great demand. It goes without saying that the new classification was of material assistance to the roasters in bettering their output, as blending was then put on a scientific basis.

About the middle of the nineties San Francisco began to function as a distributing center, and shipments were made from there to St. Louis and Cincinnati. The selection of coffees on their cup merit was undoubtedly a factor of considerable importance in creating new outlets; although it is generally conceded that the winning personality of C. E. Bickford helped considerably. Mr. Bickford, by this time, had succeeded his former employer. He served the trade by living up to the best standards of business practise until his death in 1908; when the institution he founded was continued by E. H. O'Brien under the name of C. E. Bickford & Co.



CALIFORNIA STREET, THE COFFEE-TRADING CENTER OF SAN FRANCISCO

San Francisco imported 175,293 bags of coffee in 1900. Imports had grown to 256,183 bags by 1906; and the following were the leading importers, as taken from a compilation by C. E. Bickford & Co.:

IMPORTERS OF COFFEE BY SEA
San Francisco, 1906

	Bags
Haas Bros.	38,947
Otis, McAllister & Co.	34,342
Jno. T. Wright	21,741
Geo. A. Moore & Co.	17,851
Castle Bros.	17,397
Lastreto & Co.	15,609
Bloom Bros.	14,372
W. R. Grace & Co.	14,143
Baruch & Co.	9,400
Schwartz Bros.	7,310
Dieckmann & Co.	6,981
H. Hackfeld & Co., Ltd.	4,466
M. J. Brandenstein & Co.	4,281
Urioste & Co.	4,081
Goldtree, Liebes & Co.	3,962
J. Z. Posadas	3,950
Mohns-Frese Com. Co.	3,714
Welch & Co.	3,385
Thannhauser & Co.	3,328
E. Mejia	2,965
Hind, Rolph & Co.	2,814
Hellmann Bros. & Co.	2,170
Parrott & Co.	2,137
J. A. Folger & Co.	2,094
S. L. Jones & Co.	2,042
Ariza & Lombard	1,133
Hamberger-Polhemus Co.	1,096
Theo. H. Davies & Co., Ltd.	955
Livierato Frères	927
J. D. Spreckels & Bros. Co.	828
McCarthy Bros.	795
W. Loaiza & Co.	642
Wm. Halla	591
H. W. Burmester	582
Williams, Dimond & Co.	399
M. Phillips & Co.	381
Alexander & Baldwin	358
London, Paris & Am. Bank, Ltd.	333
P. J. Knudsen Co.	309
Ballou & Cosgrove	300
M. Schweitzer & Co.	300
Johnson-Locke Merc. Co.	270
The Lewin-Meyer Co.	250
Sperry Flour Co.	231
Canadian Bank of Commerce	200
Porto Rico Coffee Co.	148
McChesney & Sons	145
Bowring & Co.	145
China & Java Export Co.	140
John Weissman	126
Montealegre & Co.	120
W. H. Miller	109
Maldonado & Co.	105
De Fremery & Co.	100
Sundries	683
Total	256,183

BIRD'S EYE VIEW OF SAN FRANCISCO'S COFFEE DISTRICT

The imports of green coffee at San Francisco in 1914 - 15 amounted to about 400,000 bags. The beginning of the World War was almost coincidental with an energetic campaign waged by San Francisco coffee interests to popularize Central American coffees, and particularly Guatemalas, in this country. The time was well chosen, as the world's exposition at San Francisco offered a good opportunity to acquaint the public with the fine qualities of Guatemala growths. Furthermore, it was necessary to create new markets for these coffees, which in former years had been very extensively used in Europe. Figures show that San Francisco's efforts were crowned with success. In 1916, the importation increased by fifty percent; and in 1917, importations were double those of 1915. In 1918, a total of nearly 1,000,000 bags was reached; and this mark was passed by almost 200,000 in 1919. In 1920, 971,567 bags were imported.

The origin of San Francisco's fight for control of Central American coffee dates back to the years 1908 to 1910, when the German Kosmos Line was fighting the Pacific Mail for the Central and South American shipping business. W. R. Grace & Co., at that time, were already the heaviest shippers of American merchandise to the Latin-American countries; and while their own steamers were not touching at Central American ports, they were handling merchandise from the United States and nitrates from the South American countries in their own bottoms, and were also engaged as general carriers for that trade. The fight directed by the Kosmos Line against the Pacific Mail, which at that time was under the control of the Southern Pacific Company, was accordingly directed against the Grace interests also, so far as South American countries were concerned. The fight was long and bitter, and costly to both sides. At times, the contenders offered to take freight, not only without charge, but to pay the shipper a premium for the privilege of carrying his freight.

Differences were finally settled in conference; but the experience taught the American interests that they could survive in any territory only if at all times they were able to provide their own cargoes for their own boats, as had been accomplished with nitrate in South America. J. H. Rosseter, the Grace manager, who later became well known as director of operations of the United States Shipping Board during the war, undertook an extended trip to Central America in 1912 to study the situation at close range. There was only one product of Central America that was available in cargo quantities, namely coffee; and naturally his attention was drawn to the possibility of carrying coffee to San Francisco to provide return cargoes for ships of the Pacific Mail, or associated lines, carrying merchandise for the Central American countries.

While in Guatemala, Mr. Rosseter outlined a future policy in regard to Central American coffees; the basis being his firm determination that coffees grown in Central America, and logically and geographically tributary to San Francisco distribution, should come to San Francisco in largely increasing quantities.

Up to that time San Francisco had received, on an average, only 200,000 bags of Central American coffee annually for the ten preceding years; while Europe had received about 1,500,000 bags a year. The quantity necessary to make San Francisco a factor would call for an importation, on an average, of 750,000 bags — a quantity almost four times as large as then established.

This was an extremely ambitious undertaking, considering the conditions then prevailing in Central America. European countries were firmly entrenched in the coffee business in Central America, with Germany leading in Guatemala, France in Salvador and Nicaragua, England and France contending for superiority in Costa Rica, and the United States getting only the leavings.

The European countries held their position in the Central American Coffee trade by liberal financing, and a thorough knowledge of the varying qualities of coffee produced on the different plantations. San Francisco, the only important port in the United States dealing in Central American coffees, had neither strong financial entrenchment in Central America nor expert knowledge of coffee quality. Year after year, San Francisco merchants had depended on consignments chosen by the consignors. This rendered quality selection of coffees by the importers impossible.

Rosseter, being primarily a steamship man, tackled the proposition from the standpoint of transportation, figuring that if he could establish and maintain preferential steamer service to San Francisco, and steady freight rates, a great step would be accomplished toward the desired end. This led to his interest in the Pacific Mail Company, of which the final outcome was his present position as vice-president of the reorganized Pacific Mail Company. In that capacity he maintained, practically throughout the entire period of the World War, freight rates on coffee from Central America to San Francisco that gave that Pacific port an immediate and definite advantage.

This gave merchants in San Francisco the chance to build up a steady trade, and prevented other ports in the United States from entering into serious competition with San Francisco as a distributing point for Central American coffees. The view taken by Rosseter was as far-sighted as it was broad. He argued that with the end of the war there would be no strength in a scattering distribution of Central American coffees by New York, New Orleans, and San Francisco; and the only promise of maintenance of the business for the United States would be in maintaining unity of distribution in one port of the United States, namely San Francisco.

The first year open to European competition after the war showed that San Francisco was well able to maintain its lead in Central American coffees. Today, the mortgages formerly held by European merchants on the native coffee plantations, and the control thereby of the produce of these plantations, are in the hands of American merchants; and what is more, out of general merchandising and importing by merchants of San Francisco there have developed expert coffee departments in all of the larger houses. The years of the war brought the product of virtually all plantations in Central America to the intimate knowledge of these expert coffee departments; and today the advantage that Europe formerly had — of knowing exactly

what a specific plantation produced — is possessed by San Francisco merchants.

This is no small advantage when we consider that in Guatemala and Costa Rica, qualities vary from plantation to plantation, and that often on adjoining plantations there is from three to five cents a pound difference in quality, from the standpoint of cup merit.

One can not buy coffee in Central America as in Brazil, as these countries are not highly organized commercially, and the importers here are forced to assume the rôle of the Brazilian *commisario* and banker. The crop has to be financed from six to nine months before it is brought to the port; and the securities covering such advances are at best of questionable value, on account of political insecurity, and the ever-threatening earthquakes, and the uncertainty of the elements. Distribution of the coffee after it has been brought to San Francisco also involves many difficulties, notwithstanding that the demand is good. This will be better realized when we consider that the Pacific coast, from Alaska to Mexico, and eastward as far as the Rocky Mountains, embraces a population of about 8,000,000, whose annual consumption is estimated at 400,000 bags; and that, as already stated, treble that quantity was imported to San Francisco in 1919.

In 1900, ninety-nine firms were engaged in the green coffee importing business (some were roasters also) in New York; six in Philadelphia; twenty-eight in San Francisco; twelve in New Orleans. In 1920, there were two hundred and sixteen in New York; thirty-one in San Francisco; fifteen in New Orleans.

Green Coffee Trade Organizations

Previous to the organization of the roasters, the only kind of coffee organization in this country of more than local importance was the New York Coffee Exchange, which came into existence in 1881, the organization meeting being held in the offices of B. G. Arnold & Co., at 166 Pearl Street, New York. The Exchange was incorporated December 7, 1881, the incorporators being Benjamin Green Arnold, Francis B. Arnold, William D. Mackey, John S. Wright, William Sorley, Joseph A. O'Brien, H. Clay Maddux, C. McCulloch Beecher, Geo. W. Flanders, and John R. McNulty. B. G. Arnold was the first president. Soon afterward, rooms were rented and fitted up for trading purposes at 135 Pearl Street, at the junction of Beaver and Pearl Streets, and only two blocks away from the more pretentious structure now housing the Coffee Exchange. Actual trading operations did not begin until March 7, 1882.

The New York Coffee Exchange was the world's first coffee-trade organization of national proportions. Havre's exchange was inaugurated in 1882, under the name of the Coffee Terminal Market. Five years later, coffee exchanges were opened in Amsterdam and Hamburg; while the exchanges of London, Antwerp, and Rotterdam did not come into existence until the year 1890. The exchange in Trieste, Italy, was organized in 1905; while the Coffee Trade Association of London was started in 1916. The first exchange in Santos was started in 1914.

The success of the New York Coffee Exchange led to its imitation in other coffee ports of the United States. Baltimore started a similar organization, early in 1883, under the name of the Baltimore Coffee Exchange; but after a short existence, it petered out. New Orleans organized a green coffee trading association in 1889, as a coffee committee of the Board of Trade. It is still active. The Green Coffee Association of New Orleans, Inc., which is distinct from the Coffee Committee, was established January 7, 1920. San Francisco did not have a trading exchange until 1918, in which year the Green Coffee Association of the San Francisco Chamber of Commerce began operations.

Growth of the Coffee-Roasting Trade

The wholesale coffee roasting business in the United States seems to have started in the closing years of the eighteenth century. In February, 1790, a "new coffee manufactory" began business at 4 Great Dock Street, New York, and the proprietor announced that he had provided himself at considerable expense with the proper utensils "to burn, grind and classify coffee on the European plan." He sold the freshly roasted product "in pots of various sizes from one to twenty weight, well packed down, either for sea or family use so as to keep good for twelve months."

A second roasting plant started up at 232 Queen Street, New York, nearly op-

posite the governor's house, toward the close of 1790. This second coffee roasting plant was known in 1794 as the City Coffee Works. James Thompson operated a "coffee manufactory" at 25 Thames Street in 1795. In this year there was also the "Old Ground Coffee Works" in Pearl Street, formerly Hanover Square, "three doors below the bank at number 110," operating "two mills, one pair French burr stones" but no orders were accepted here for less than six pounds, at "two pence advanced from the roasting loss."

Other coffee manufactories followed in the large towns of the new states; and, always, the coffee was treated "on the European plan." This meant that it was "burnt over a slow coal fire, making every grain a copper color and ridding it all of dust and chaff." There was usually a difference in price of three to four pence a pound between the green and roasted product. Packages of roasted coffee under the half-dozen weight were sold in New York in 1791 for two shillings and three pence per pound, allowance being made for grocers at a distance. In those days, the favorite container was a narrow-mouthed pot or jar of any size. This was the first crude coffee package. In retailing the product, cornucopias made of newspapers, or any other convenient wrapping, were first employed; but, with the introduction of paper bags in the early sixties, the housekeeper soon became educated to this more sanitary form of carry package, and its permanence was quickly assured.

The following were listed in Longworth's *Almanack* as coffee roasters in New York in 1805: John Applegate; Cornelius Cooper; Benjamin Cutler, 104 Division Street; George Defendorf, 83 Chapel Street; William Green; Cornelius Hassey, 14 Augustus Street; Joseph M'Ginley, 28 Moore Street; John W. Shaw, 43 Oliver Street; John Sweeney, Mulberry Street; Patience Thompson, 23 Thames Street.

Elijah Withington came from Boston to New York in 1814. He set up a coffee roaster in an alley behind the City Hall and engaged a big, raw-boned Irishman to run it. This was the beginning of a coffee roasting business that has continued until the present day. Withington dealt in Padang interiors, Jamaica, and West Indian coffees, and numbered many society folk among his customers. Withington's business removed to 7 Dutch Street in 1829: and the firm became Withington & Pine in 1830.

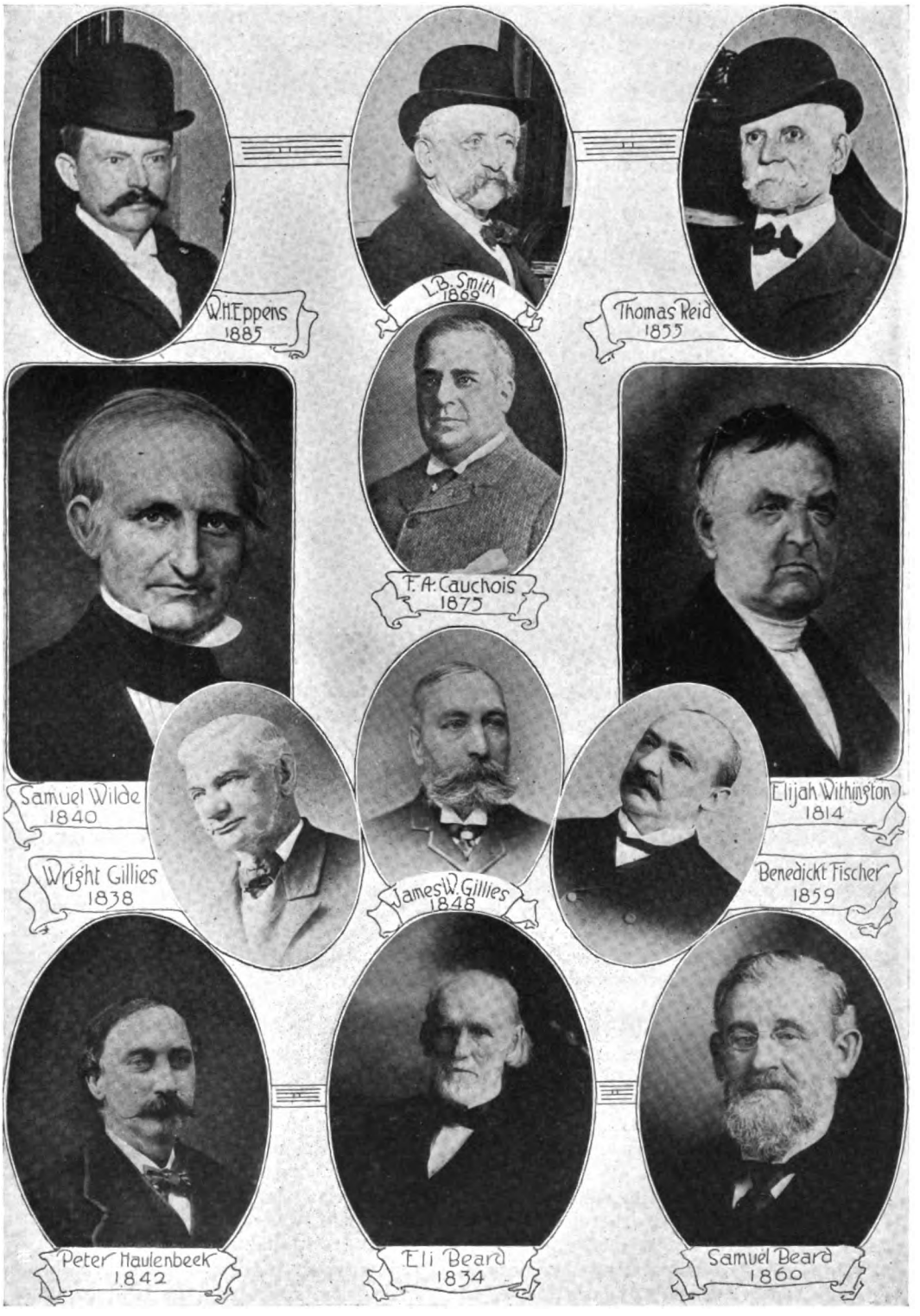
The roasted coffee business in New York had grown to such proportions in 1833 and gave such promise, that James Wild considered it a good investment to bring over from England for his new coffee manufactory in New York a complete power machinery equipment for roasting and grinding coffee. There was also an engine to run it. It was set up in Wooster Street opposite the present Washington Square.

Samuel Wilde, son of Joseph Wilde, of Dorchester, Mass., came to New York about 1840 to make his fortune. He was a young man with vision; and first applied himself with diligence to the hardware and looking-glass business. When he found that most of his customers were theaters and saloons, his religious scruples bade him abandon it, which he did.

Meanwhile, in 1844, Withington's pioneer roasting enterprise had admitted Norman Francis and Amos S. Welch as general partners, and Samuel and Charles C. Colgate as special partners, under the style of Withington, Francis & Welch. It so continued until 1848, when Samuel Wilde — who had selected the coffee business as more honorable than the one in which he started — was admitted, and the firm became Withington & Wilde.

Mr. Withington retired in 1851, and Samuel Wilde associated with him in the business his sons Joseph and Samuel, Jr., the title becoming Samuel Wilde & Sons. Samuel Wilde, Sr., died in 1862. The title then became Samuel Wilde's Sons. Joseph Wilde died in 1878, and Samuel Wilde, Jr. in 1890, the business being left to and continuing with a younger brother, John, from 1878 to 1894, when John's son, Herbert W. Wilde, became a member of the firm, which continues the old title at 466 Greenwich Street, as Samuel Wilde's Sons Company, having been incorporated in 1902. John Wilde died in 1914.

Another grandson of Samuel Wilde is William B. Harris, who engaged in the coffee roasting business in Front Street from 1904 to 1917. From 1908 to 1918 he acted as coffee expert for the United States Department of Agriculture. William B. Harris is a son of Samuel L. Harris, who mar-



PIONEERS IN THE ROASTED COFFEE BUSINESS OF NEW YORK CITY

With approximate dates of their entry into the trade

ried a daughter of Samuel Wilde, and who for a number of years was connected with Samuel Wilde's Sons.

Although a number of roasters and grinders for family use were patented in the United States in the first half of the nineteenth century, the coffee merchants depended almost entirely on English manufacturers for their wholesale equipment until 1846, when James W. Carter of Boston brought out his "pull-out" roaster. This machine, and others like it, encouraged the development of the coffee-roasting business, so that when the Civil War came, coffee manufactories were well scattered over the country. The demand for something better in coffee-machinery equipment was answered by Jabez Burns with his machine for filling and discharging without moving the roasting cylinder from the fire.

Among the early grocery concerns in New York that were also coffee roasters were: R. C. Williams & Co., starting as Mott & Williams in 1811, changing to R. S. Williams & Co. in 1821, to Williams & Potter in 1851, and to its present title in 1882; Acker, Merrall & Condit Co., founded in 1820; Park & Tilford, founded in 1840; Austin, Nichols & Co., founded in 1855; and Francis H. Leggett & Co., founded in 1870.

There were twenty-one "coffee roasters and spice factors" in New York in 1848. Among them were: Beard & Cummings, 281 Front Street; Henry B. Blair, 129 Washington Street; Colgate Gilbert, 93 Fulton Street; Wright Gillies, 236 Washington Street; and Withington, Wilde & Welch, 7 Dutch Street. In this year, two coffee importers, fourteen tea importers, and forty-one tea dealers were listed in the *City Directory*.

The *Directory* for 1854 listed twenty-seven coffee roasters and spice factors, among them, in addition to the above, being Peter Haulenbeek, 328 Washington Street; Levi Rowley, 102 West Street; William J. Stitt, 159 Washington Street; and George W. Wright, 79 Front Street. In those days not all the wholesale coffee factors were roasters; there was much trade roasting by a few large plants.

While the coffee-roasting business of Samuel Wilde's Sons appears to be the oldest in New York, having descended in a practically unbroken line from 1814, several others continued considerably past the half-century mark, and among them special mention should be accorded to: Levi Rowley's Star Mills, dating back to 1823; Beard & Cummings, 1834; Wright Gillies & Bro., 1840; Loudon & Son, the Metropolitan Mills, 1853; and the Eppens Smith Co., present day successors of Thomas Reid's Globe Mills of 1855.

The Star Mills in Duane Street became a real factor in the wholesale coffee-roasting business on Manhattan Island about 1823. At a later date, Levi Rowley secured control, and under his able direction the business flourished. Benedict & Gaffney bought the Star Mills from Rowley in 1885. A few years later the firm became Benedict & Thomas, then Thomas & Turner, and finally the R. G. Thomas Co. R. G. Thomas sold the equipment in 1920, ending the manufacturing end of the business just about a century from the time it started. Mr. Thomas is now with Russell & Co. Before being identified with the Star Mills, he was for twenty years with Packard & James, 123 Maiden Lane.

While still a lad of nineteen, Wright Gillies came from a Newburgh farm in 1838, and obtained a clerkship in a tea store in Chatham Street, now Chambers and Duane Street. He branched out for himself in the tea and coffee business at 232 Washington Street in 1840, removing in 1843 to 236, which had a courtyard where he installed a horse-power coffee roaster. In the same building, over the store, lived Thomas McNell and his wife. Mr. McNell afterward became a member of the firm of Smith & McNell, proprietors of the Washington Street hotel and restaurant, for many years one of New York City's landmarks.

The coffee business, thus started by Wright Gillies, is still conducted, as the Gillies Coffee Co., by the same family and at practically the same location; and it is interesting to note that the roasting room still has the original arrangement, partly below the street level but with the machinery in view from the sidewalk. This arrangement was characteristic of the old roasting establishments.

James W. Gillies, a younger brother, came from Newburgh in 1848 to assist in the enterprise. Young Gillies superintended the horse-power roaster and drove the

GROUP OF OLD-TIME NEW YORK COFFEE ROASTERS, 1892

Standing, left to right, W. H. Eppens, Fred Reid, unknown, Julius A. Eppens, Fred Eppens. Seated, left to right, John F. Pupke, Thomas Reid, Henry Mayo, Fred Akers, Alexander Kirkland

light spring delivery cart. Soon the firm became Wright Gillies & Bro. Fires visited the business in 1849 and in 1858; but each time it arose the stronger for the experience. Wright Gillies retired in 1884, and James W. Gillies assumed entire charge under the name of the Gillies Coffee Co. He continued active until his death in 1899. The business was incorporated by his children under the same name in 1906.

Edwin J. Gillies, son of James W. Gillies, started a separate coffee business at 245 Washington Street, in 1882. In 1883 he admitted as a partner James H. Schmelzel, a fellow Columbia alumnus. The enterprise was successful for many years, being incorporated under the title of Edwin J. Gillies & Co., Inc. It was consolidated in 1915 with the business of Ross W. Weir & Co., 60 Front Street, Edwin J. Gillies becoming a vice-president (with L. S. Cooper also vice-president) of the corporation of Ross W. Weir, Inc.

Burns & Brown started in the coffee roasting business in 1853 in an old building at the corner of Washington and Chambers Streets for which they paid an annual rental of one thousand dollars. This was the beginning of the Metropolitan Mills, opposite to the present location of Loudon & Son, 181 Chambers Street, the latest successors to the business. Burns & Brown continued for two years, when they failed, and Wright Gillies & Bro. succeeded, and put in Ebenezer Welsh as manager. Later, Wright Gillies & Co. sold out the plant to Capt. Edward C. Russell, who associated with him his son-in-law, Edward A. Phelps, Jr. At the dissolution of this partnership in 1870, the firm became Trusdell & Phelps. Mr. Phelps succeeded Trusdell, and sold out to Loudon & Stellwag in 1877. They were succeeded by Loudon & Johnson in 1879, and this firm continued until 1910, when James D. Johnson retired, and the firm of Loudon & Son took charge. These were J. Carlyle Loudon and his son, Howard C. Loudon, who died in 1911. The firm name of Loudon & Son continues.

One of the most vigorous personalities of the sixties, and one whose influence extended well into this generation, was Thomas Reid. Born in Bridgeport, England, he came to the United States as a boy, and started his business career as a grocer's clerk in Brooklyn. Within three months after landing, he bought out his employer. He entered the wholesale coffee-roasting business at 105 Murray Street, New York, in 1855, in partnership with a Mr. Townsend under the style of the Globe Mills, which were the predecessors of the Eppens Smith Co. now in Warren Street. Jabez Burns, inventor of the Burns coffee roaster, before this a teamster for Henry Blair, was at one time bookkeeper for the Globe Mills. In 1864, Mr. Burns sold to the Globe Mills the first roasters of his manufacture — two one-bag, four-foot machines that were given a place alongside of four of the old-style Carter pull-outs.

Mr. Townsend died the first year of the Globe Mills' existence; and Thomas Reid continued without a partner until 1863, when he became associated with John F. Pupke, as Pupke & Reid. The business was then at 269 Washington Street. Thomas Reid was resourceful and enterprising; also he had vision. He saw the day of package coffee coming, and nearly "beat" John Arbuckle to it. As early as 1861 we find him advertising in the *City Directory*, "spices put up in every variety of package."

Lewis A. Osborn, 69 Warren Street, New York, and 81 - 83 South Water Street, Chicago, was advertising "Osborn's Celebrated Prepared Java Coffee — put up only by Lewis A. Osborn" in 1863 - 64. Thomas Reid appears to have acquired this brand and to have begun its exploitation as "Osborn's Old Government Java," a ground package coffee, and certainly one of the earliest package coffees. However, this brand never attained the national vogue achieved by John Arbuckle's package coffee, which first appeared in 1865, although the name Ariosa was not given it until 1873.

Between 1855 and 1865 there were only half-a-dozen wholesale coffee roasters on Manhattan Island, and Thomas Reid was their leader. Much of his work was roasting for the trade, and this undoubtedly interfered with the logical development of his package-coffee ideas.

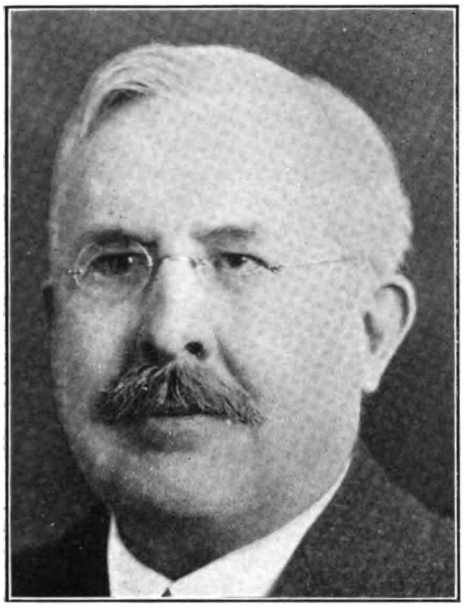
The firm became Pupke, Reid & Phelps in 1882. In 1885, it became the original Eppens-Smith Co.; later, the Eppens, Smith & Wiemann Co., and lastly, the Eppens Smith Co. Thomas Reid was vice-president of the Eppens, Smith & Wiemann Co., and continued in that position until his death in 1902. Julius Eppens is the present head of the business.

Other package coffees of the sixties were Government coffee put out by Taber & Place's Rubia Mills, 353-355 Washington Street, in "tin foil pound papers," and L. Bruckmann & Co.'s London Club, packed at 107 Warren Street.

Another old-time New York coffee-roasting business is that of Samuel S. Beard & Co. This business was founded in 1834 on Front Street by Eli Beard (father of Samuel S. Beard,) and W. A. Cummings as Beard & Cummings. In 1872, the firm moved to Duane Street, where it was joined by Messrs. S. S. Beard and Cottrell, and the new firm became Beards & Cottrell. Mr. Cottrell retired in 1883, and the firm became Samuel S. Beard & Co. Upon the death of S. S. Beard in 1905, James H. Murray, who had been with the concern for many years, became head of the house. Mr. Murray died six months later. The business moved in 1913 to 92 Front Street, where it continues as a stock company, with J. R. Westfal as manager.

Austin C. Fitzpatrick, well known among New York coffee roasters, is a graduate of the Thomas Reid school, having entered the business of this pioneer roaster in 1865. He was western salesman for Pupke & Reid until 1871, when he became associated with Rufus G. Story under the firm name of R. G. Story & Co. Later, he formed a partnership with Howard E. Case, buying out the old house of Beard & Howell. When Mr. Case retired in 1887, the firm became A. C. Fitzpatrick & Co. This title continued for twelve years, when the Knickerbocker Mills were taken over, and the business was incorporated as the Knickerbocker Mills Co., with Mr. Fitzpatrick as president. The Knickerbocker Mills, acquired by the corporation, had been founded in 1842 and were for more than forty years at 154 - 156 Chambers Street. The business is now at 196 - 198 Chambers Street.

Many of the pioneers in the coffee roasting business of this country were men who came from the British Isles and Germany.



JULIUS A. EPPENS, NEW YORK

A notable figure from the latter country was Benedickt Fischer, who knew coffee in Germany before coming to New York in his nineteenth year. He started at 323 - 329 Greenwich Street, near Duane Street, in 1859. His first roaster was a primitive affair built under the E. J. Hyde patent by the Coffee Roaster & Mill Manufacturing Co. of Philadelphia. It was turned by hand by Fischer and his helper. This was about 1862. In 1864, the business required larger quarters, and was removed to the corner of Duane and Greenwich Streets. A new plant was erected at the corner of Beach and Greenwich Streets in 1894, and the present plant was erected at the corner of Franklin and Greenwich Streets in 1906. Upon the death of Benedickt Fischer in 1903, the business passed under the control of William H. Fischer, son of Benedickt, and Benedickt's son-in-law, Charles E. Diefenthaler, for many years associated with the house. At present, the company is a corporation, with C. E. Diefenthaler, president; T. F. Diefenthaler, vice-president and treasurer; and T. O. Budenbach, secretary.

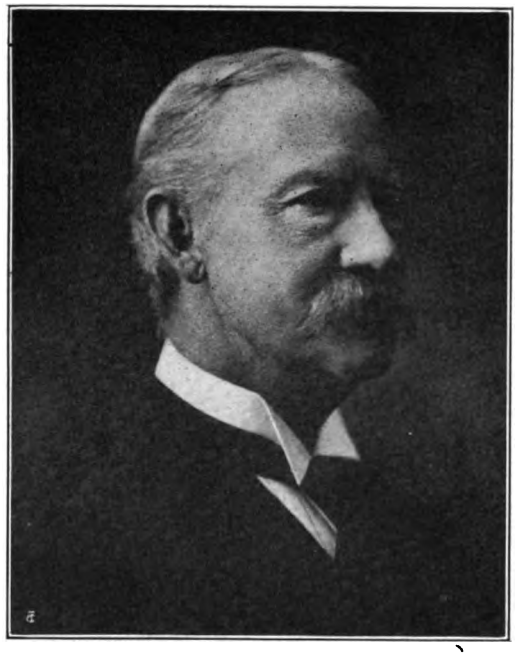
Bowie Dash, a commanding figure in the New York green coffee trade, founded the Holland Coffee Co., roasters, in 1885. He placed H. Bartow in charge. Mr. Dash himself was never active in the affairs of the company. J. Bowie Dash, son of Bowie Dash, entered the Holland Coffee Co. as a boy. Bowie Dash died in 1894. Mr. Bartow left the Holland Coffee Co. in 1897, and J. Bowie Dash became president. He sold the company in 1917 to S. B. Morrison, who consolidated it with his Esperanza Coffee Co. The business is still conducted as the Holland Coffee Co., with Mr. Morrison as president, at 162 Front Street.

George Fisher was a well known coffee roaster of the sixties. He began in the old Hope Mills, 71 Fulton Street, and, at the age of thirty, entered into partnership with D. C. Ripley, establishing the Hudson Mills. The firm became Sanger, Beers & Fisher in 1868; Mr. Fisher retired in 1882; and died in 1896.

Peter Haulenbeek began work as delivery boy in a grocery store. He entered the coffee business in the sixties in the employ of Wright Gillies, and went into the wholesale coffee-roasting trade under his own name at 170 Duane Street in 1876. His son, John W. Haulenbeek, Sr., came into his father's business in 1887. Peter Haulenbeek died January 15, 1894, and the firm name was changed to John W. Haulenbeek & Co. The business remained in the same building up to 1916, when it was moved to its present location at 393 Greenwich Street. John W. Haulenbeek, Jr., of the third generation, is now active in the business.

A leading figure in the sixties was James Brown, who started as an engineer, rose to a partnership, and retired after the Civil War, a wealthy man. He was a partner with Thomas Reid in the old Globe Mills. He was also associated with B. Fischer in the firm of Fischer, Kirby & Brown, and established the firm of Brown & Scott in Duane Street, where Peter Haulenbeek succeeded to the business. Afterward, he continued in the firms of Brown & Jones and Bisland & Brown, and died in 1898.

Van Loan, Maguire & Gaffney was a formidable combination in the coffee-roasting business in its day. Thomas Van Loan was for thirty years a partner in the firm of W. J. Stitt & Co. (William J. Stitt was in business at 173 Washington Street in the fifties). Joseph Maguire was a practical spice grinder. Hugh Gaffney was with Brown & Scott until the firm retired in 1879, and for ten years thereafter he traveled for B. Fischer & Co. Then he became



THOMAS VAN LOAN, NEW YORK

a member of the firm of Benedict & Gaffney. Ill health caused his temporary retirement; but he returned to the business in 1897 when he organized the firm of Van Loan, Maguire & Gaffney. Joseph Maguire died in 1904.

Mr. Gaffney died on March 20, 1912, and the name of the business was changed to Van Loan & Co., with Thomas Van Loan as the head of the business, under which name and management it still continues at 64 North Moore Street.

O'Donohue is a well known name in the development of both the green and roasted coffee trade of New York City. John O'Donohue was a leader in the green coffee business in 1830. It was John O'Donohue's Sons in 1873. John B. O'Donohue, son of Peter O'Donohue and grandson of the original John, after leaving John O'Donohue's Sons, formed a partnership with Robert C. Stewart (the present head of R. C. Stewart & Co.) to engage in the green coffee jobbing business as O'Donohue & Stewart. This partnership was dissolved in 1893. For a few years, John O'Donohue was associated with the coffee-roasting firm of Wing Bros. & Hart. About 1898, he formed the O'Donohue Coffee Co. at 284 Front Street. In 1910, this was consolidated with the Potter Coffee Co. and Bennett, Sloan & Co. to form the Potter, Sloan, O'Donohue Co. The firm dissolved in 1915. Ellis M. Potter came to New York from the Potter-Parlin Spice Mills in Cincinnati. Mr. O'Donohue died in 1918.

In the seventies Frederick Akers was proprietor of the oldest and best known trade roasting establishment in New York. The plant was known as the Atlas Mills, and was at 17 Jay Street. Mr. Akers died in 1901. The same year, William J. Morrison and Walter B. Boinest, former employees of Akers, formed a partnership to carry on the same kind of business at 413 Greenwich Street. It is still at that address under the name of Morrison & Boinest Co.

Col. William P. Roome, a Chesterfieldian figure among New York coffee roasters, came into the trade in 1876, when he established the firm of William P. Roome & Co., with T. L. Vickers as partner. In the Civil War that had preceded, young Roome (he was then nineteen) had distinguished himself as a conspicuous hero of the Sixth Army Corps, having entered the service as a second lieutenant in the Sixty-fifth New York Volunteers.

William P. Roome & Co. first engaged in the importation of tea, but they added coffee to the business in 1889. Col. Roome disposed of it in 1903 to assume charge of the tea and coffee department of the Acker, Merrall & Condit Company, a position which he still holds.

Frederick A. Cauchois, another picturesque figure among New York coffee roasters, entered the trade as a clerk in the New York office of Chase & Sanborn in 1875. After further tutelage under Frank Williams in the coffee brokerage business, he bought the old Fulton Mills (Colgate Gilbert & Co., 1848), in Fulton Street, where he did some of the most original advertising for coffee that the trade has seen. His Private Estate coffee in little burlap bags, his donkey train that carried the bags of green coffee through the streets of the metropolis, his system of delivering fresh coffee daily to the grocery trade, and his Japanese paper filter device to insure the proper making of the coffee, made him famous. He brought something of the spirit of the old English coffee house to America, and incorporated it in Keen's Chop House in New York. He died in 1918.

The business of Russell & Co. was founded by Robert S. Russell & Frank Smith at 107 Water Street in 1875. In 1895, S. L. Davis, one of the present owners, formerly with Merrit & Ronaldson, became a partner. In 1900, Frank C. Russell, son of the senior member, was admitted to a partnership; and upon the death of his father in 1904, he and Mr. Davis became owners of the business.

Ross W. Weir, who, in addition to being a successful New York coffee roaster, has also attained prominence as president of the National Coffee Roasters Association and chairman of the Joint Coffee Trade Publicity Committee, handling the million dollar coffee advertising campaign, was born in New York in 1859, the son of J. B. Weir, one of the pioneer forty-niners, who at one time was engaged in the export commission business in San Francisco.

Mr. Weir began his business career as a general utility boy in the jobbing grocery house of S. H. Williamson, 36 Broadway, New York, in 1875. Then he was a clerk for Park & Tilford, office man with Arbuckle Bros. and with Geo. C. Chase & Co., tea importers, for two years, afterward being admitted to a junior partnership. In 1886, the firm of Ross W. Weir & Co. was formed to engage in the roasting of coffee and importing and jobbing of teas at 105 Front Street. In 1887, the business was removed to 58 - 60 Front Street. When the corporation of Ross W. Weir, Inc. was formed in 1915 to take over the business of E. J. Gillies & Co. Inc., Mr. Weir became president and treasurer of the combined organization.

Pioneer Wholesale Coffee Roasters

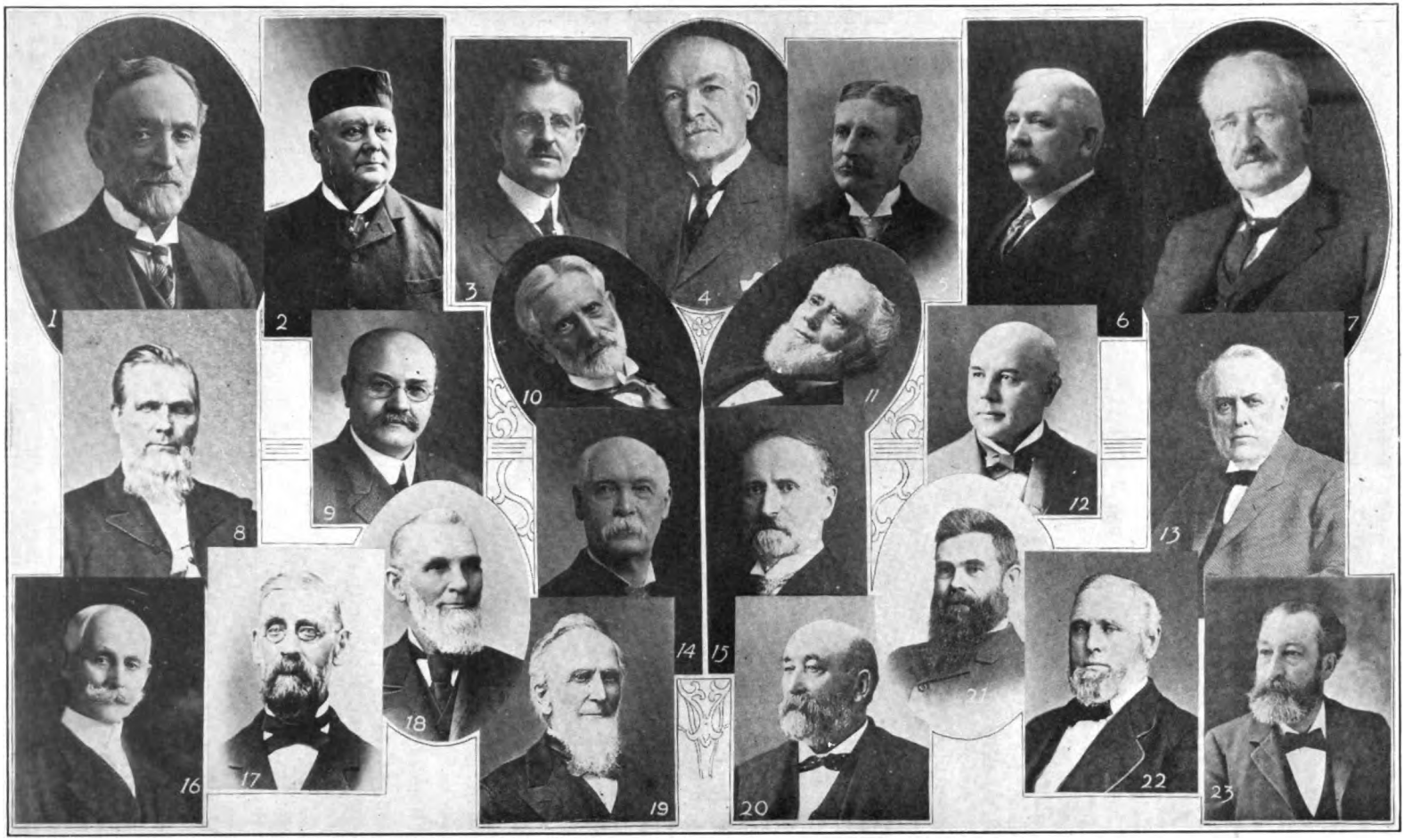
A reference to other pioneers in the wholesale coffee-roasting trade may not be amiss here, even though it involves a repetition of some names that have been given special mention in the case of New York. In the list that follows are included the most prominent firms and the best known names that helped make roasted coffee history in the United States in the nineteenth century, particularly from 1845 to 1900:

NEW YORK. The most prominent firms in the business in New York in the sixties were: Thomas Reid & Co., Globe Mills; Geo. A. Merwin & Co.; Levi Rowley, Star Mills; A. B. Thorn; Fischer & Lehmann, later Fischer & Thurber, and Fischer, Kirby & Brown; Knickerbocker & Cooke; A. D. Thurber; Wm. J. Stitt & Co.; Samuel Wilde's Sons.

COL. WILLIAM P. ROOME, NEW YORK

In the seventies, in addition to most of the above list, there were: Pupke & Reid; Arbuckle Bros.; Edward A. Phelps, Jr.; Bonnett, Schenck & Earle; Fischer & Lansing; J. G. Worth; Jackson & Co.; Charles Conway; Neidlinger & Schmidt; James L. Arcularius; S. M. Beard, Sons & Co.; H. K. Thurber & Co.; Wright Gillies & Bro.; Bennett & Becker; Great American Tea Co.; Brown & Scott.

Between 1876 and 1900 the following well known names appeared in the trade: Frederick Akers; Eppens-Smith Co., afterward Eppens, Smith & Wiemann Co., and later Eppens Smith Co.; B. Fischer & Co.; R. P. McBride; Fitzpatrick & Case, afterward A. C. Fitzpatrick & Co.; Great Atlantic & Pacific Tea Co.; Loudon & Johnson; Edwin Scott; Peter Haulenbeek, afterward Haulenbeek & Mitchell, and Haulenbeek Roasting & Milling Co.; Joseph Stiner & Co.; Austin, Nichols & Co.; Bennett, Sloan & Co.; Gillies Coffee Co.; Benedict & Gaffney, afterward Van Loan, Maguire & Gaffney; Ross W. Weir & Co.;



PIONEER COFFEE ROASTERS OF THE NORTHERN AND EASTERN UNITED STATES

1 — W. F. McLaughlin, Chicago; 2 — J. G. Flint, Milwaukee; 3 — Frank J. Geiger, Indianapolis; 4 — Samuel Mahood, Pittsburgh; 5 — Henry A. Stephens, Cleveland; 6 — W. H. Harrison, Cincinnati; 7 — Albert A. Sprague, Chicago; 8 — D. Y. Harrison, Cincinnati; 9 — William Grossman, Milwaukee; 10 — Edward Canby, Dayton; 11 — Thomas J. Boardman, Hartford; 12 — Francis Widlar, Cleveland; 13 — O. W. Pierce, Sr., Lafayette, Ind.; 14 — A. M. Thomson Chicago; 15 — Samuel Young, Pittsburgh; 16 — Alvin M. Woolson, Toledo; 17 — Martin Hayward, Boston; 18 — George C. Wright, Boston; 19 — William Boardman, Hartford; 20 — James S. Sanborn, Boston; 21 — James Heekin, Cincinnati; 22 — James F. Dwinell, Boston; 23 — Caleb Chase, Boston

Union Pacific Tea Co.; Hillis Plantation Co.; Edwin J. Gillies & Co.; Jones Bros.; Holland Coffee Co.; Samuel Crooks & Co.; Benedict & Thomas.

BOSTON. Among the pioneers in the coffee-roasting business in Boston were: N. Berry & Sons; Blanchard & Bro.; Carter, Mann & Co.; Noah Davis & Co.; Dyer & Co.; E. Emerson; Flint Bros. & Co.; J. T. & N. Glines; Hayward & Co.; Geo. W. Higgins & Co.; Hill, Dwinell & Co.; H. B. Newhall; Richardson & Lane; N. Robinson & Co.; Russell & Fessenden; Stickney & Poor; E. H. Swett; the Tremont Coffee & Spice Mills; Swain, Earle & Co.; and the Martin L. Hall Co.

Between 1876 and 1900 these names were among those added: Shapleigh Coffee Co.; Gilman L. Parker; W. S. Quinby & Co.; Thomas Wood & Co.

Dwinell & Co. and Hayward & Co. both engaged in the coffee roasting business about 1845. In 1876, they, James F. Dwinell, Martin Hayward, and his brother-in-law George C. Wright, joined hands under the name of Dwinell, Hayward & Co. In 1894, Mr. Hayward having previously retired, the name of the firm was changed to Dwinell, Wright & Co. Mr. Dwinell died in 1898; and in 1899, Mr. Wright formed a Massachusetts corporation under the present name, Dwinell-Wright Co. George C. Wright died, 1910, and his son, George S. Wright, who had been treasurer, became president. A grandson, Warren M. Wright, and a nephew, G. E. Crampton, together with R. O. Miller and Charles H. Holland, are active in the present conduct of the business.

Caleb Chase with Messrs. Carr and Raymond founded the firm of Carr, Chase & Raymond at 32 Broad Street in 1864. The name was changed to Chase, Raymond & Ayer in 1871. James S. Sanborn, who had formerly been in the coffee and spice trade at Lewiston, Me., with a branch office in Boston, combined with Caleb Chase to form Chase & Sanborn in 1878. Charles D. Sias was admitted to the firm in 1882. A Montreal office was opened in 1884. Charles E. Sanborn, son of James S., was admitted in 1888. James S. Sanborn died in 1903, and Charles E. Sanborn died two years later. Charles D. Sias died in 1913.

Swain, Earle & Co. were established about 1868. In the same year, Byron T. Thayer entered the employ of the firm as a bookkeeper. He was taken into partnership in 1884, and upon the death of Mr. Earle, became managing partner. In 1915, he was the sole surviving partner of the company. He died in the latter part of 1921; and the business was absorbed by Alexander H. Bill & Co. in January, 1922.

PHILADELPHIA. The following were the most prominent Philadelphia coffee roasters in 1861: Grever & Bro.; Henry Hinkle; William Johnston; George Kelly; Thornley & Ryan; Thornley & Bro.; Vankorn, Guggenheimer & Co.; D. J. Chapman; Bohler & Weikel; Charles Kroberger; and James R. Webb & Son.

Later came: Robert J. Rule & Bro.; G. Boyd & Co.; Nutrio Mfg. Co.; C. J. Fell & Bro.; R. R. & A. Deverall; C. Thomas; William H. Cheetham, Jr.; Hill & Thornley; George Ogden & Co.; Weikel & Smith; and Alexander Sheppard.

Between 1876 and 1900 these names appear; Henry A. Fry & Co.; Robert Smith & Sons; B. S. Janney, Jr. & Co.; and Weikel & Smith Spice Co.

Robert Smith came as a country lad to Philadelphia, and drove a wagon for Jesse Thornley, a coffee roaster. In a few years, he had secured an interest in the firm; and in 1860, the name was changed to Thornley & Smith. Mr. Thornley died in 1872, and Mr. Smith bought out the Thornley interests and traded as Robert Smith until 1889. In that year, he admitted his eldest son, Robert A. Smith, into the firm, which became Robert Smith & Son. William T., another son, was admitted in 1889, the firm name being changed again to Robert Smith & Sons. Robert Smith, Sr., retired in 1902. In the same year his youngest son, George H. Smith, was admitted to the firm, and it became Robert Smith's Sons, the active members being William T. and George H. Smith.

James R. Webb established the coffee roasting business of James R. Webb & Son in 1833. It was taken over by Alexander Sheppard in 1870. Later it became Alex. Sheppard & Sons, Inc. Mr. Sheppard died in 1916, and the business has been conducted by a corporation in which his four children are the principal stockholders.

CHICAGO. Some pioneers in the Chicago trade were: Alfred H. Blackall; Excelsior Mills (Downer & Co.); Huntoon & Towner;

W. F. McLaughlin; Knowles, Cloyes & Co.; Thomson & Taylor; H. F. Griswold; G. M. Hall; John L. Davies & Co.; Bell, Conrad & Webster; Sprague, Warner & Co.; Lee & Murbach; A. Stephens & Co.; and Whiting, Goeble & Co.

In the period between 1876 and 1900 the following became well known: Sprague, Warner & Griswold; Reid, Murdoch & Fischer; E. B. Millar Spice Co.; Wm. M. Hoyt Co.; Franklin MacVeagh & Co.; Sherman Bros. & Co.; H. C. & C. Durand; A. H. Pratt; McNeil & Higgins Co.; J. H. Bell & Co.; J. H. Conrad & Co.; Steele-Wedeles Co.; Krag-Reynolds Co.; Arbuckle Bros., and Puhl-Webb Co.

H. C. Durand organized the wholesale grocery house of Durand & Co. in 1851. Calvin Durand entered the firm in 1879, and the name was changed to H. C. & C. Durand. Adam J. Kaspar began to work in a retail grocery. In 1875, he went with the wholesale grocery firm of James Forsythe & Co. and two years later with H. C. & C. Durand. In 1894, the name was changed to Durand & Kasper. H. C. Durand died in 1901, and Calvin Durand died in 1911. Durand & Kasper merged, 1921, with Henry Horner & Co. and McNeil & Higgins into the Wholesale Grocers Corporation.

Samuel A. Downer founded the Excelsior Mills (Downer & Co.) in 1853. Sidney O. Blair entered the employ of the company in 1871. E. B. Millar & Co. took over the business in 1878, incorporating under that name in 1882. Mr. Blair retired in 1913, and W. S. Rice was elected president. He died in 1918, and Mr. Blair was re-elected president; with W. C. Shope, vice-president; and C. S. Mauran, secretary and treasurer.

In the spring of 1862, Albert A. Sprague came to Chicago from Vermont. With Z. B. Stetson he formed the firm of Sprague & Stetson, wholesale grocers. Mr. Stetson retired the following year, and a new partnership was formed with Ezra J. Warner, under the name of Sprague & Warner. In 1864, O. S. A. Sprague, a young brother of the senior partner, was admitted to the firm, which was reorganized under the style of Sprague, Warner & Co. Under this name it has since continued. About the year 1876, machinery was installed, and the roasting of coffee began. Oscar Remmer entered the employ of the company in 1878 at the age of 16, and became manager of the mill department in 1895. In 1912, he was made a member of the board of directors, and was elected vice-president in 1919. O. S. A. Sprague died in 1909, Ezra J. Warner Sr. in 1910, and Albert A. Sprague in 1915.

In 1865, A. M. Thomson, at that time a salesman for A. H. Blackall, owner of the American Mills, arranged with a Mr. Berg and a Mr. Davis to go in the coffee-roasting business with him as Berg, Thomson & Davis. After a year, however, the name became A. M. Thomson. James Thomson, a brother, came into the firm in 1868, and it was then called A. M. & James Thomson. A year later, it became A. M. Thomson again. In 1872, immediately after the fire, Mr. Taylor, a member of the firm of Whiting & Taylor, joined Mr. Thomson under the firm name of Thomson & Taylor. They continued the business under this name about ten years, until it was incorporated in 1883 under the name of Thomson & Taylor Spice Co. Among the wholesale grocers who became stockholders at that time was W. S. Warfield, of Quincy, Ill., who, in 1901, with his son, John D. Warfield, bought most of Mr. Thomson's holdings and obtained a controlling interest. The name was changed in 1920 to the Thomson & Taylor Co.

William F. McLaughlin founded the firm of W. F. McLaughlin & Co. in 1865. He died in 1905; and the business was incorporated with his son, George D., as president, and another son, Frederick, as secretary and treasurer.

The Puhl-Webb Company, founded, 1882, as a partnership by Thomas J. Webb and John Puhl, was incorporated in 1896.

ST. LOUIS. The following were among the pioneer coffee firms of St. Louis, dating back to the 1860-70 decade: James H. Forbes; Flint, Evans & Co.; Wm. Schotten & Co.; Fred W. Meyer; H. & J. Menown; Cavanaugh, Rearick & Co.; and Frederick A. Churchill & Co.

From 1876 to 1900 there were added: Nash, Smith & Co.; Fink & Nasse Co.; Hanley & Kinsella Coffee & Spice Co.; Flugel & Popp; C. F. Blanke Tea & Coffee Co.; Steinwender, Stoffregen & Co.; David G. Evans & Co.; and the Aroma Coffee & Spice Co.

David Nicholson established a tea and coffee business under the name of the

Franklin Tea Warehouse in 1853. A year later, James H. Forbes, born in Kinross, Scotland, bought out Nicholson. In 1857, A. E. Forbes, his son, came into the store after school hours, and was admitted to partnership in 1870. The retail end of the business was dropped in 1880. Robert M., the younger son of James H., was taken into the firm a few years after A. E. Forbes. James H. Forbes died in 1890, and the business has since been carried on by his sons as the James H. Forbes Tea & Coffee Co. James H. Forbes installed the first Burns roaster in St. Louis, and always claimed to have been the first man to roast coffee in the middle west.

William Schotten began his roasting business in 1862, although he had been in the grocery business since 1847. A short time later, a brother, Christian Schotten, came to the United States from Germany and was admitted to partnership, the firm becoming William Schotten & Bro. Christian died in 1866, and a brother-in-law, Henry Verborg, was admitted, the name being changed to William Schotten & Co. William died in 1874, and the business devolved upon his eldest son, Hubertus. In 1878, another son, Julius J., was taken in at the age of 17. Hubertus died in 1897, and Julius became manager and sole proprietor. He died in 1919. Since that time, his son, Jerome J., has carried on the business, which continues under the name of the Wm. Schotten Coffee Co.

The firm of David G. Evans & Co. was founded in 1856 by David G. Evans under the style of Flint, Evans & Co., changed in 1870 to David G. Evans & Co. David G. Evans died in 1916, and the name of the company was changed in 1917, to the David G. Evans Coffee Co., with Gwynne Evans, a son of David G., as president of the corporation.

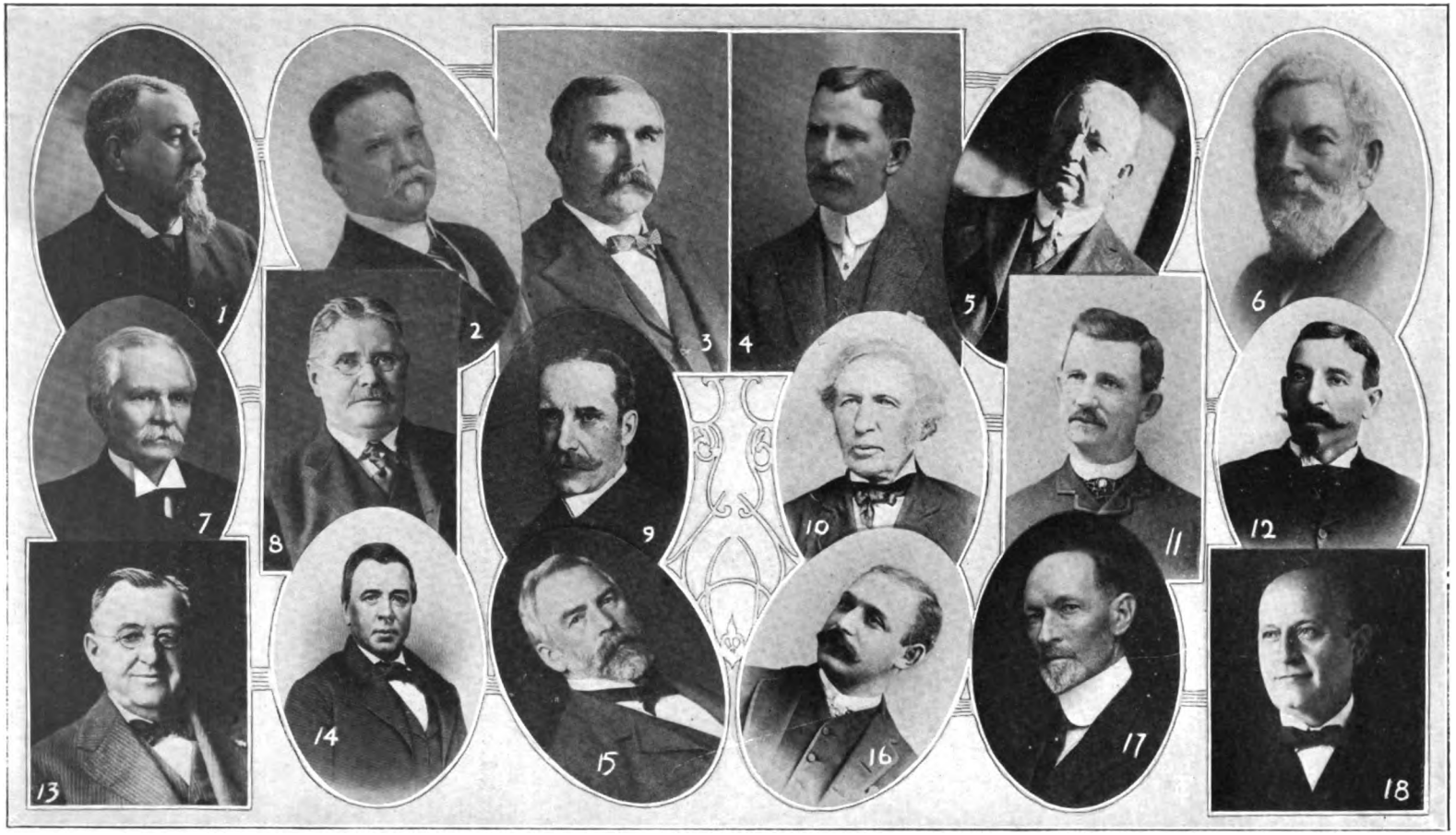
The George Nash Grocery Co. bought the Eagle Coffee and Spice Mills from the estate of Mathew Hunt in 1870. About this time Michael E. Smith, who had been with the concern for a number of years, was made a partner. The firm was incorporated in 1887 as the Nash-Smith Tea & Coffee Co. George Nash, Sr., died in 1910.

CINCINNATI. Among the pioneer coffee roasters in Cincinnati were: John C. Appenzeller; Blook & Varwig; J. Brock; Cincinnati Spice Mills; Eagle Spice Mills; Harrison & Wilson; Parker & Dixon; Kilgour & Taylor; J. M. Krout; Succop & Lips; and H. R. Droste.

After the centennial year and previous to 1900, the following names were added: Potter & Parlin; James Heekin & Co.; Flugel & Popp; Utter, Adams & Ellen; J. Henry Koenig & Co.; F. W. Hinz; and the Woolson Spice Co.

D. Y. Harrison, then thirty-five years old, came from Newark, N. J., and settled in Cincinnati in 1843, opening a coffee roasting business as Harrison & Wilson. He used an old pull-out roaster with first a negro, and then a horse-power tread-mill, for power. A few years later, W. H. Harrison, a son of the founder, was admitted to the firm, the name at that time being Parker & Harrison. D. Y. Harrison died in 1872. Fire totally destroyed the plant in 1875. W. H. Harrison then formed a partnership with J. W. Utter, and started in again. He sold out to his partner in 1883 and went in business for himself as W. H. Harrison & Co. D. Y. Harrison is said to have been the first man to roast coffee west of Pittsburg.

The Heekin Company was established in 1870 by James Heekin and Barney Corbett as a partnership under the name of Corbett & Heekin. In a short time, Corbett died; and the name of the firm was then changed to James Heekin & Co. Alexander Stuart was admitted to the partnership about 1883, and retired four years later. James J. Heekin, older son of James Heekin, was admitted to partnership in 1892. Charles Lewis, after twenty years' experience in the coffee trade in Louisville, Cincinnati, and New York, was admitted to the firm in 1895. James Heekin died in 1904. Upon his death, a corporation was formed under the name of the James Heekin Company, with Charles Lewis as president, continuing until he retired in 1919. In this year a new corporation, called the Heekin Company, was formed, taking over the business of the James Heekin Co. and the Heekin Spice Co., the latter having been organized in 1899. James J. Heekin was chosen president of the new company, with Albert E. Heekin, vice-president; and Robert E. Heekin, secretary and general manager.



PIONEER COFFEE ROASTERS OF THE SOUTHERN AND WESTERN UNITED STATES

1 — J. B. Sinnott, New Orleans; 2 — Julius J. Schotten, St. Louis; 3 — Charles Stoffregen, St. Louis; 4 — W. T. Jones, New Orleans; 5 — J. A. Folger, jr., San Francisco; 6 — M. E. Smith, St. Louis; 7 — A. E. Forbes, St. Louis; 8 — David G. Evans, St. Louis; 9 — W. J. Kinsella, St. Louis; 10 — James H. Forbes, St. Louis; 11 — J. A. Folger, Sr, San Francisco; 12 — Joseph Closset, Portland, Ore.; 13 — J. Zinsmeister, Louisville; 14 — Wm. Schotten, St. Louis; 15 — A. Schilling, San Francisco; 16 — M. J. Brandenstein, San Francisco; 17 — J. O. Cheek, Nashville; 18 — A. H. Devers, Portland, Ore.

LOUISVILLE. Pioneers in this early center of coffee roasting in the south were: Thornton & Hawkins; Charles J. Bouche; H. N. Gage; A. Engelhard; and Jacob Zinsmeister.

R. J. Thornton & Co. were founded in 1837 by Richard J. Thornton and Thomas Hawkins, as Thornton & Hawkins. Thornton died in 1860. His interests remained, but the firm changed to Hawkins & Thornton. Hawkins died in 1877, and Mrs. Thornton, having purchased the Hawkins interest, ran the business as R. J. Thornton & Co. until her death in 1885. John Hayes, her son-in-law, then bought the company; and when he died in 1904, his widow ran the business with Thomas A. Crawford as manager. Mrs. Hayes, the last of the Thornton family, died in 1919, and her interests were sold to Crawford and R. H. Dorn, an old employee. The firm first roasted coffee about 1846. It is interesting to note that the plant has occupied the present site since its founding, eighty-four years ago.

Albert Engelhard, Sr., founded in 1855 a wholesale grocery house which later became A. Engelhard & Sons, Inc. In 1879, George; in 1882, Victor H.; and in 1883, Albert, Jr.; all sons of the founder, entered the business. Upon moving into larger quarters in 1890, all of the sons were taken in as partners. Albert Engelhard, Sr., retired in 1892, and the management was assumed by Victor H. The business increased rapidly, and in 1897 the firm moved to its present location. Incorporated in 1901, the wholesale grocery end was abandoned in 1903, and the concern became a strictly coffee, tea, and spice house. Victor H. Engelhard died in 1918; and his sons, Victor, Jr., and R. W. Engelhard, who had been in the business for several years, assumed active management. Victor Engelhard, Sr., was prominent in coffee affairs and in the early work of the National Coffee Roasters Association.

Jacob Zinsmeister, of J. Zinsmeister & Sons, was another old-time Louisville coffee man. Before he started roasting, he was a big factor in the green coffee trade. The business was established in 1866 at New Albany, Ind., by Frank Zinsmeister, Sr., but was later moved to Louisville. Jacob Zinsmeister was taken into the business in 1872, and the name was changed to Frank Zinsmeister & Son. He is still active in business, although he has turned the management over to his three sons.

NEW ORLEANS. Men and firms active in early coffee roasting in New Orleans were: Shaw's Louisiana Coffee and Spice Mills; Ruliff, Clark & Co.; R. Poursini & Co.; and Smith & McKenna.

Between 1876 and 1900 were added: New Orleans Coffee Co.; Smith Bros. & Co.; Southern Coffee Polishing Mills; and Cage & Drew.

Smith Bros. & Co. were organized in 1863 as Smith & McKenna. Mr. McKenna died in 1872, and the firm name was changed to Smith Bros. & Co. The two Smith brothers died in 1891, and 1892. About 1900, the name became Smith Bros. & Co., Ltd., and J. B. Sinnot, who had been employed for a number of years by the firm, gained control. The company failed in 1913. Mr. Sinnot then entered the coffee brokerage business, in which he remained until his death in 1917.

Born in New Orleans in 1865, Daniel H. Hoffman started work as a sample clerk in the office of E. P. Cottraux, who was at that time the only coffee broker in New Orleans. In 1887, Mr. Hoffman started in business for himself. In 1894, he opened the Southern Coffee Polishing Mills, which have since become the Southern Coffee Mills, Inc.

W. T. Jones, for many years in business as a coffee broker in Keokuk, Iowa, founded the New Orleans Coffee Co. in 1890. He died in 1919.

R. H. Cage and J. C. Drew organized in 1898 the firm of Cage & Drew. In 1900, they established the Louisiana Coffee Mills under the name and style of Cage, Drew & Co., Ltd.

Ben C. Casanas joined the New Orleans Coffee Co. as a city salesman, and later became a road salesman. He withdrew in 1901 to organize the Merchants Coffee Co. of New Orleans, Ltd.

SAN FRANCISCO. Pioneer coffee roasters in San Francisco were: J. A. Folger & Co.; Charles Berhard; H. Gates; D. Ghirardelli & Co.; E. Loeven & Co.; Marden & Myrick; Maine & Eckerenkotter; G. Venard; and Charles Zwick.

Between 1876 and 1900 the following were added: A. Schilling & Co.; W. H. Miner; Siegfried & Brandenstein; George W. Caswell.

J. A. Folger & Co. were established in 1850 as Wm. H. Bovee & Co. A few years later, the name became Marden & Folger, Mr. Folger having been connected with the old firm. In the early sixties the name was changed to J. A. Folger & Co. Two employees were taken into the firm in 1878. These were A. Schilling and a Mr. Lamb. The company was now called Folger, Schilling & Co. This partnership was dissolved in 1881, and the business continued as J. A. Folger & Co. Mr. Folger died in 1890, and the firm was then incorporated under the same name.

Shortly after Folger, Schilling & Co. was dissolved, A. Schilling and George Volkman formed the firm of A. Schilling & Co. Mr. Schilling began his career as an office boy with J. A. Folger in 1871.

M. J. Brandenstein and John C. Siegfried formed a co-partnership under the name of Siegfried & Brandenstein in 1880. Mr. Brandenstein bought out his partner in 1894, and took in his brothers, Manfred and Edward, the firm name becoming M. J. Brandenstein & Co.

George W. Caswell started in the retail tea and coffee business in San Francisco under his own name in 1885. In 1898, the business became wholesale only. It was incorporated in 1901 as the George W. Caswell Co. The company took over the brands and travelling organization of Lievre, Frick & Co., which went into a dissolution of partnership in 1902.

MILWAUKEE. Prominent among early coffee roasters of Milwaukee were: W. & J. G. Flint; James Ryan & Co.; J. B. Reynolds; Jewett & Sherman; and C. E. Andrews & Co. Later we find added the Wm. Grossman Co.

J. G. Flint and Wyman Flint founded the business known as W. & J. G. Flint in 1858. J. G. Flint bought out his brother in 1880 and continued as the J. G. Flint Co., owner of the Star Coffee and Spice Mills. He died in 1896. The business was incorporated in 1901 as the J. G. Flint Co., with W. K. Flint, a son of J. G., as president. The Jewett & Sherman Co. took control in 1911.

Professor Milo P. Jewett, Professor S. S. Sherman, and his brother, William Sherman, founded the firm of Jewett, Sherman & Co. in 1867, and continued under that name until 1875, when it was incorporated as Jewett & Sherman Co., with Milo P. Jewett as president, and Henry B. Sherman, secretary and treasurer. Professor S. S. Sherman and his sons, Fred and Henry B., sold out their interests in 1878 and formed a new business in Chicago under the name of Sherman Bros. & Co. William M. Sherman then became president of Jewett & Sherman Co., and Charles A. Murdock, a nephew of S. S. and William Sherman, was made secretary and treasurer. Mr. Murdock withdrew in 1881 and established the C. A. Murdock Mfg. Co. in Kansas City. In that same year, William H. Sherman, another nephew, became a stockholder and one of the directors of Jewett & Sherman Co. Dr. Lewis Sherman succeeded his father as president of the company in 1891, and served in that capacity until his death in 1915, when he was succeeded by his son, Lewis Sherman, who is president of the company at the present time (1922). John Horter, who is now secretary, joined the business in 1877.

William Grossman started in the wholesale grocery business in 1886. John and Henry Dahlman were admitted to partnership in 1889. About three years later, the latter closed out his interests to J. F. W. Imbusch. The present corporation was established in 1892 as Wm. Grossman & Co. The firm was incorporated August 1, 1916, as the Wm. Grossman Co., with Wm. Grossman as president, George A. Grossman as vice-president, and Paul E. Apel as secretary and treasurer.

Another old-time coffee man of Milwaukee was Charles A. Clark, who had been in the coffee business for nearly twenty years before he organized the present business of Clark & Host Co.

TOLEDO. The pioneer roasting firms here seem to have been: Warren & Bedwell; and J. B. Baldy & Co. Later, after 1876, we find added the Bour Company, and the Woolson Spice Co.

The latter company was founded in 1882 by A. M. Woolson,, who up to that time had conducted a successful retail grocery business for several years. The Woolson Spice Co. was sold to H. O. Havemeyer of New York in 1896, the reputed sale price being $2,000,000. A. M. Woolson retired from business at that time. Upon the death of Mr. Havemeyer, the company passed into the hands of Hermann Sielcken; and when

Office of Forest City Coffee & Spice Mills,

No. 20 MERWIN STREET,

CLEVELAND, OHIO.

GREEN COFFEES *having advanced largely the past week, we quote our prices of* GROUND COFFEE, *until further notice, as follows:*

Best Mocha	Coffee,	29 cts.	₱ lb.
Best Old Gov't Java	"	27 "	"
Pure Java	"	24 "	"
Fresh Java	"	22 "	"
Best Rio	"	21 "	"
Pure Rio	"	19 "	"
Dandilon	"	16 "	"
Pure West India	"	16 "	"
No. 1 West India	"	14 "	"
Union	"	12 "	"

Hoping to be favored with your further orders, we remain,

Yours Respectfully,

A. Stephens & Son.

Cleveland, Oct. 14th, 1862.

GROUND COFFEE PRICE LIST OF 1862

he died, an American company secured control.

The Bour Company was incorporated in 1892, following a partnership which had succeeded to a small business concern under the name of the Eagle Spice Company. The principal stockholders were: J. M. Bour, F. G. Kendrick, and Albro Blodgett. Mr. Blodgett bought the Bour interests in 1909 and with S. W. Beckley, who had been sales manager for a number of years, acquired practically all the other outside interests. The name was changed in 1921 to the Blodgett-Beckley Co., the officers being Albro Blodgett, president, S. W. Beckley, vice-president and manager, and Henry P. Blodgett, secretary and treasurer.

CLEVELAND. Pioneers in Cleveland were: Smith & Curtis; A. Stephens & Sons; John H. Ganse; and W. D. Drake & Co. In 1870, we find Edwards, Townsend & Co.; Knight, Eberman & Co.; Talbot, Winslow & Co.; Williams & Tait; and Lemmon & Son, added.

Beards & Cummings, coffee roasters of New York City, established a branch in Cleveland under the management of Alvan Stephens in 1855. Later, Stephens took over the business for himself and changed the name to Frisbie & Stephens. In 1861 Alvan's sons, Henry A. and Samuel R., were admitted and the firm became A. Stephens & Sons. Alvan Stephens died in 1873, and Samuel moved to Chicago to open a branch. He died in 1878. Henry A. continued the business until 1881, when Francis Widlar was admitted to partnership, and the name was changed to Stephens & Widlar. Henry A. Stephens died in 1897, and A. L. Somers, H. H. Hewitt, and D. D. Hudson, all old employees, were admitted, and the firm name was changed to F. Widlar & Co. Carl W. Brand, a nephew of Francis Widlar, joined the company in 1898. Upon the death of his uncle, the business was incorporated as the Widlar Co., and Mr. Brand became president in 1910.

PITTSBURGH. Next to New York, Pittsburg was one of the first cities to forge to the front as a coffee-roasting center. These are the firms that were among the leaders in the period between 1860 and 1870: Arbuckles & Co.; W. T. Bown & Bro.; Dilworth Bros.; Rinehart & Stevens; T. C. Jenkins & Bro.; Carter Bros. & Co.; J. S. Dilworth & Co.; Jesse H. Lippincott; Shields & Boucher; and Haworth & Dewhurst.

Samuel Young, Samuel Mahood, and E. B. Mahood formed a partnership as Young, Mahood & Co. in 1879. E. B. Mahood withdrew in 1890. Samuel Mahood retired in 1906, and the company was incorporated as the Young-Mahood Company, with Samuel Young as president, and W. James Mahood as vice-president and general manager.

PORTLAND, OREGON. Early roasters in the trade of this city were: J. F. Jones; H. C. Hudson & Co.; Marden & Folger; Verdier & Closset; and Closset & Devers.

Joseph and Emile Closset formed a partnership as Closset Bros. in 1880. A. H. Devers, who had been a salesman with Folger, Schilling & Co., San Francisco, and later with A. Schilling & Co., bought out Emile Closset in 1883, and the firm became Closset & Devers. Joseph Closset died in 1915.

BALTIMORE. Pioneer roasters in Baltimore were: Joseph Braas; Daniel Many; George Pearson; Sylvester Ruth; and John G. Siegman. These were quickly followed

by Barclay & Hasson; Zoller & Little; Benjamin Berry; Jesse Lazear; and others.

Later, after 1876, came: E. Levering & Co.; the Enterprise Coffee Co.; C. D. Kenny; J. W. Laughlin & Co., now Le Morgan Coffee Co.; and the Saxon Coffee Company.

DETROIT. In Detroit in 1860-70 were: Evans & Walker; Farrington, Campbell & Co.; A. R. & W. F. Linn; J. H. Riggs; and Palmer, Warner & Co. After 1876 were added Sinclair, Evans & Elliot; Huber & Stendel; and J. A. Parent & Co.

OTHER CITIES. Names of pioneer roasters of other towns in 1860 and 1870 were: George Boardman, Albany, N. Y.; Chubuck & Saunders, Binghamton, N. Y.; George W. Hayward, and P. J. Ferris, Buffalo, N. Y.; Lorimore Bros., and George R. Forrester, Elmira, N. Y.; Hatch & Jenks, Jamestown, N. Y.; N. B. Beede, Newburgh, N. Y.; A. F. Booth, Poughkeepsie, N. Y.; Ethridge, Tuller & Co., Rome, N. Y.; M. N. Van Zandt & Co., L. B. Eddy & Co., and C. T. Moore, Rochester, N. Y.; Ostrander, Loomis & Co., and Jacob Crouse & Co., Syracuse, N. Y.; C. H. Garrison, Troy, N. Y.; Hinchman & Howard, and J. Griffiths & Co., Utica, N. Y.; B. F. Hoopes, Bloomington, Ill.; C. P. Farrell, and Charles Richards, Peoria, Ill.; Slemmons & Conkling, Springfield, Ill.; Henry Wales, Bridgeport, Conn.; A. B. Gillett, Wm. Boardman & Sons, Hartford Steam Coffee & Spice Mills, and Park, Fellowes & Co., Hartford, Conn.; Benj. Peck & Kellum, and Steele & Emery, New Haven, Conn.; W. S. Scull & Co., Camden, N. J.; Theo. F. Johnson & Co., and the Pioneer Mills, Newark, N. J.; Charles A. Dunham, New Brunswick, N. J.; James Ronan and Wm. Dolton & Co., Trenton, N. J.; Butler, Earhart & Co., Columbus, Ohio; C. A. Trentman & Bro., and J. D. Beach & Co., Dayton, Ohio; W. & S. Stevens, and F. C. Dietz, Zanesville, Ohio; J. E. Tone, Des Moines, Iowa; H. P. Hess, Cornell & Smith, and E. Warne, Easton, Pa.; E. S. Forster, Erie, Pa.; Haehnlen Bros., Harrisburg, Pa.; D. G. Yuengling, Pottsville, Pa.; A. G. Zilmore & Co., Scranton, Pa.; Granger & Co., Titusville, Pa.; Huestis & Hamilton, and B. Trentman & Son, Ft. Wayne, Ind.; S. Hamill & Co., Keokuk, Ia.; H. H. Lee, and Maguire & Gillespie, Indianapolis, Ind.; Joseph Strong, Terre Haute, Ind.; Curtis & Burnham, Leavenworth, Kan.; Yates & Dudley, Lexington, Ky.; A. Turner, Wheeling, W. Va.; Granger & Hodge, and Nathaniel Crocker, St. Paul, Minn.; W. W. Totten & Bro., Nashville, Tenn.; Henry Burns, Savannah, Ga.; A. McFarland, Springfield, Mass.; Alexander Wills & Co., Montreal, Canada; and Peter Hendershot, St. Catherine, Canada.

Between 1876 and 1900, many other names came into prominence, and among them mention should be made of: H. Hulman, Terre Haute, Ind.: A. B. Gates & Co., and Schnull & Krag, Indianapolis, Ind.: O. W. Pierce Co., and Geiger-Tinney Co., Lafayette, Ind.: Twitchell, Champlin & Co., Portland, Me.; Nave-McCord Mfg. Co., Mokaska Mfg. Co., and the Midland Spice Co., St. Joseph, Mo.; Beaham-Moffatt Mfg. Co., and C. A. Murdock & Co., Kansas City, Mo.; Clarke Bros. & Co., T. S. Grigor & Co., Consolidated Coffee Co., and McCord, Brady Co., Omaha, Neb.; Dayton Spice Mills Co., and Canby, Ach & Canby, Dayton, Ohio; Ohio Coffee & Spice Co., and Butler, Crawford & Co., Columbus, Ohio; Bacon, Stickney & Co., Albany, N. Y.; Charles R. Groff Co., St. Paul, Minn.; John G. Schuler, Covington, Ky.; J. W. Thomas & Son, Nashville, Tenn.; Geo. F. Hanley & Co., Los Angeles, Cal.; C. S. Morey Mercantile Co., Denver, Col.; and W. G. Lown Coffee Co., Washington, D. C.

William Boardman, founder of Wm. Boardman & Sons Co., Hartford, Conn., began roasting coffee at Wethersfield in 1841 with a hand-power roaster, using wood for fuel. He moved his plant to Hartford in 1850. In the same year, his son Thomas J., after serving a fifteen-year apprenticeship in a country store, entered his father's employ. Three years later, he and his brother, William F. J. Boardman, were admitted to the firm, the name being changed to Wm. Boardman & Sons. Howard F. Boardman, a son of Thomas J., began working in the business in 1880, and was admitted to partnership in 1888. The same year, the founder died and William F. J. retired. The business has since been conducted by Thomas J. and Howard F. Boardman.

The company was incorporated in 1898, and John Pepion was admitted. The president of the company, Thomas J. Boardman, is at the time of writing ninety years

old. He still takes a very active interest in the business, and his "cup sense" is as acute as ever.

The O. W. Pierce Company, Lafayette, Ind. was founded in 1847 by Oliver Webster Pierce, Sr. Except for three years in the fifties, when the firm was known as Reynolds, Hatcher & Pierce, it has been known as the O. W. Pierce Company since it was established. The company was incorporated in 1905 with O. W. Pierce, Jr. as its head. The senior Mr. Pierce died in 1921. The firm first roasted coffee in 1891. Prior to that time it had been in the wholesale grocery business.

The William S. Scull Co., Camden, N. J., was established in 1858 by William S. Scull, whose father had been in the retail tea and coffee business. William Scull died in 1916. H. Newmark founded H. Newmark & Co. in Los Angeles in 1865. He retired in 1886, and Maurice H. Newmark was made a full partner. The present name is M. A. Newmark & Co.

In 1868, Major David B. Hamill entered, as junior partner, the firm of S. Hamill & Co., Keokuk, Iowa, of which his father, Smith Hamill, was the head. Smith Hamill died in 1890, and David B. became head of the firm. He died in 1916.

William Tackaberry was a junior partner in the firm of S. Hamill & Co., Keokuk, Iowa. He began a business of his own in the same city in 1868. Ten years later, he moved the company to Sioux City, and continued there as the Wm. Tackaberry Co.

Joel O. Cheek began traveling for the wholesale grocery house of Webb, Hughes & Co., Nashville, Tenn., in 1873. Later, he was admitted to partnership, the firm becoming Webb, Cheek & Co., and then Cheek, Norton & Neal. He formed the Nashville Coffee & Mfg. Co., in 1899. It was merged in 1901 into the Cheek-Neal Coffee Co.

Jekiel and Isaac E. Tone began the business of Tone Bros. at Des Moines, Iowa, in March, 1873, with one roaster and one spice mill. The business was incorporated in 1897. Jekiel Tone died in 1900, and Isaac E. Tone in 1916. The business is now (1922) carried on by W. E. and Jay E. Tone.

Edward Canby began business in Dayton, Ohio, in 1875, succeeding the firm of J. D. Beach & Co. He retired in 1886, and the business was left in charge of Frank L. Canby and F. J. Ach. The latter had entered the employ of Canby in 1877. He secured an interest in the business in 1882, and became a partner in 1890. When the company was incorporated as Canby, Ach & Canby in 1904, he was elected president. Mr. Ach has been very prominent in the affairs of the National Coffee Roasters Association since its organization.

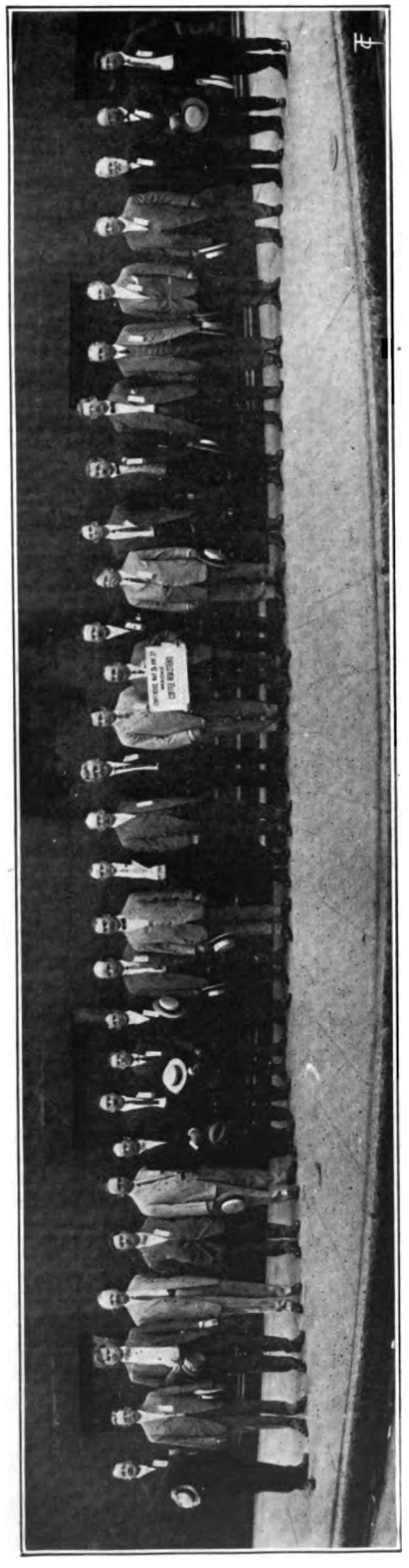
Frank J. Geiger began in the tea, coffee, and spice business in Lafayette, Ind., under the name of Culver & Geiger. Mr. Culver, who had never been active, died in 1889, and in 1892 the Geiger-Tinney Company was formed with F. J. Geiger as president. The plant was moved to Indianapolis in 1901 with William L. Horn as vice-president, and Henry C. Tinney as secretary and treasurer. The name was changed to the Geiger-Fishback Co. in 1912, and Mr. Geiger retired. Frank S. Fishback acquired all the stock of the company in 1918, and the name was changed to the Fishback Co. with F. S. Fishback, president; John S. Fishback, treasurer; and F. C. Fishback, secretary.

S. Holstad joined the Thomson & Taylor Spice Co of Chicago in 1892. He left in 1901 and went to Minneapolis, where he became a member of the firm of Atwood & Holstad. He withdrew in 1908 to form the firm of S. Holstad & Co., with Charles Ekelund and Alexander W. Kreiser as partners. After the withdrawal of Mr. Holstad from Atwood & Holstad, Mr. Atwood continued as Atwood & Co.

F. P. Atha began work as a coffee salesman with Holman & Co., Terre Haute, Ind. He went to San Francisco in 1899 and entered the employ of J. A. Folger & Co., and introduced Folger products east of the Rockies. He opened the Kansas City branch in 1907; and a year later, he was admitted to the firm and made vice-president and general manager.

The National Coffee Roasters Association

The first effort to organize the coffee roasters of the United States dates back to 1885, when several St. Louis coffee roasters came together in a kind of gentlemen's agreement not to cut the price of roasting green coffee, which had declined, owing to ruthless competition, from $1.00 to 10 cents a bag. The various parties to the agreement posted $500 checks each as forfeits, not to violate the price as fixed. After one



MEMBERS OF THE ORGANIZATION CONVENTION OF THE NATIONAL COFFEE ROASTERS ASSOCIATION, ST. LOUIS, MAY 26, 1911

Reading from left to right: W. B. Johnson, St. Louis; W. T. Jones, New Orleans; George Schulte, St. Louis; C. F. Blanke, St. Louis; Ben Casanas, New Orleans; Carl Stoffregen, St. Louis; Edward D. Hanly, Kansas City; H. C. Grote, St. Louis; James Menown, St. Louis; Frank P. Atha, Kansas City; Henry Petring, St. Louis; J. M. McFadden, Dubuque, Iowa; Joseph Maury, Memphis; T. F. Halligan, Davenport; F. J. Ach, Dayton; Carl Brand, Cleveland; Wm. Fisher, St. Louis; M. H. Gasser, Toledo; Julius J. Schotten, St. Louis; E. W. Bockman, Paducah, Ky.; Louis Christopherson, St. Louis; Felix Coste, St. Louis; W. E. Tone, Des Moines; Robert Meyer, St. Louis; Fred Roth, St. Louis; M. E. Smith, St. Louis; J. B. Dubroullett, St. Louis; Floyd Norwine, St. Louis

year, a check was cashed; but the principal claimed his lapse was clerical and not in violation of the agreement. However, as a result of the argument that followed, the organization was disbanded.

As early as 1900, leaders of the trade's best thought began to urge the need of a national organization among coffee roasters.

As a result of informal meetings between men like Robert M. Forbes, Julius J. Schotten, Robert Meyer, and Messrs. Roth and Homeyer, around the luncheon table in St. Louis, to discuss trade abuses and bring about better trade co-operation, the subject of a St. Louis organization of coffee roasters began to be agitated about 1906. It was not until four years later, however, that the idea took definite form.

On September 14, 1910, the Traffic Association of St. Louis Coffee Importers was organized, starting out with a membership of ten firms, its chief object being to obtain an adjustment of freight rates to and from St. Louis as advantageous as those prevailing for Chicago and New York.

This association — of which Robert Meyer was the first president, and H. L. Homeyer, vice-president, J. S. Hartman, secretary, and G. H. Petring, treasurer — was the forerunner of the National Coffee Roasters Traffic and Pure Food Association organized in 1911 and now known as the National Coffee Roasters Association.

At the organization meeting of the national association twenty-six coffee-roasting establishments in the Mississippi Valley were represented at the conference held May 26 - 27 in the Planters Hotel, St. Louis. The objects of the new body were announced in the constitution, as:

First: To foster and promote a feeling of fellowship and good will among its members, and on broad and equitable lines to advance the welfare of the coffee trade and the consumer.

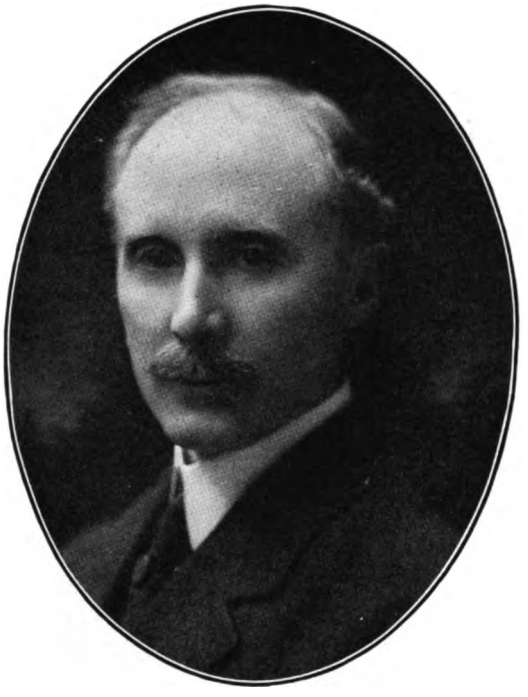
Second: To eliminate or minimize abuses, methods and practises inimical to the proper conduct of business.

Third: To assist in the enactment and enforcement of uniform pure food laws which in their operations shall deal justly and equitably with the rights of the consumer and the trade.

The association started with these officers: Julius J. Schotten, St. Louis, President; M. H. Gasser, Toledo, vice-president; W. E. Tone, Des Moines, treasurer, and W. J. H. Bown, St. Louis, secretary.

Meanwhile, as a result of an agitation started by *The Tea and Coffee Trade Jour-*

nal, a meeting of New York and eastern coffee roasters was called at the Fulton Club, New York, October 27, 1911, to discuss plans for a national organization. M. H. Gasser attended this meeting, and told of the plan of the western roasters to organize such an organization at a meeting called for Chicago the following month. The promoters of the eastern organization



ROBERT MEYER, ST. LOUIS
First president of the Coffee Roasters' original organization

subsequently abandoned their efforts in favor of the western group.

At the first convention of the National Coffee Roasters Traffic and Pure Food Association, held in Chicago, November 16-17, 1911, all the foregoing officers were retained, the office of second vice-president was created, and Frank R. Seelye was selected to fill it.

That the organization idea was popular among the roasters was evident from the fact that at the close of the convention it was announced that the membership was then seventy-one firms in cities as far east as Virginia and as far west as Kansas City. The convention demonstrated that the association was really a national organization, which quieted suspicions prevalent in some quarters of the trade in the east that it was chiefly a Mississippi Valley unit.

The first convention is remembered principally because of Hermann Sielcken's defense of the Brazil coffee valorization plan, which was then the big question of the coffee trade. The titles of some of the other addresses will serve to indicate how the scope of the association had enlarged since its organization a few months before: "An Attack on Valorization" by Thomas J. Webb, of Chicago; "Uniform Food Laws", by W. T. Jones, of New Orleans; "Penny-Change Systems," by R. W. McCreery, of Marshalltown, Ia; "Traffic and Freight Abuses," by W. E. Tone, of Des Moines; "Transportation Problems," by Carl H. Stoffregen, St. Louis; "Coffee Publicity," by F. H. Henrici, of Chicago; "Coffee Roasters' Costs and Accounting," by F. J. Ach, Chicago. The first convention proved a success, and attracted attention.

The second annual convention, held in New York, November 13 - 15, 1912, showed that the association had grown to a membership of 135 firms located in all parts of the country, and that its influence had extended throughout the whole trade. Valorization continued to be a much discussed subject. Hermann Sielcken and others again defending it in speeches; but the majority of the association seemed opposed to the scheme. Probably the most important feature of the convention was the report of the committee of nine men who had visited Brazil to investigate conditions there and to interest the Brazilian coffee growers in an advertising campaign. An address on this subject was made by the editor of *The Tea and Coffee Trade Journal,* in which he suggested a plan for propaganda and advocated scientific research to find out the truth about coffee.

The election of officers resulted in the selection of F. J. Ach, Dayton, as president; Frank R. Seelye, Chicago, first vice-president; Ross W. Weir, New York, second vice-president; and Robert Meyer, St. Louis, treasurer.

The 1912 convention changed the name of the association to the National Coffee Roasters Association, dropping the words "Traffic and Pure Food" from the original title.

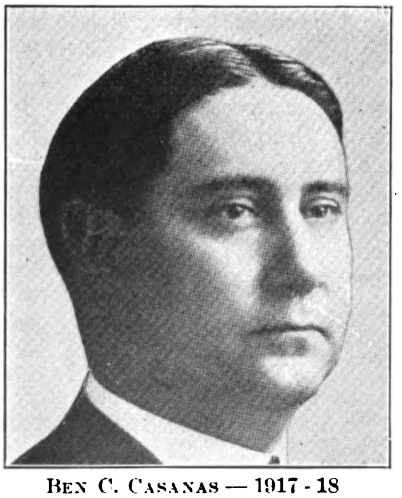
The third convention, which was held November 12 - 14, 1913, in Cincinnati, dem-

JULIUS J. SCHOTTEN — 1911 - 12

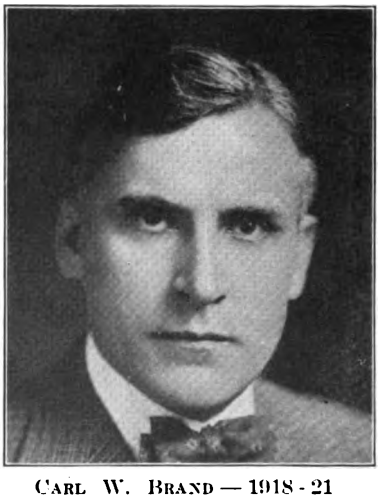
F. J. ACH — 1912 - 14

ROSS W. WEIR — 1914 - 16

FRANK R. SEELYE—1916-17



BEN C. CASANAS — 1917 - 18



CARL W. BRAND — 1918 - 21

FORMER PRESIDENTS, NATIONAL COFFEE ROASTERS ASSOCIATION

onstrated that the scope of usefulness of the association was still growing, as shown by the resolutions which approved better coffee-making publicity; favored a national coffee day; urged the appointment of inspectors at ports of entry to prevent the importation of green coffee under government standard No. 8; condemned the excessive watering of coffee and all coffee coatings; and provided for the appointment of an agent to visit Brazil to furnish members with "reliable" reports on crop flowering.

F. J. Ach was re-elected president; Ross W. Weir succeeded F. R. Seelye as first vice-president; W. T. Jones succeeded Mr. Weir as second vice-president, and Robert Meyer was retained as treasurer.

Secretary G. W. Toms, who had been appointed in April, 1913, reported that the association had made a net gain of thirteen members, bringing the total up to 144.

The membership of the association had been increased by twenty names when the fourth annual convention was opened in New Orleans, November 16 - 19, 1914, making the total 164.

Better coffee making, roasting economies, a national coffee week, and improved methods of handling green coffee in ports and warehouses, were the principal topics considered at the 1914 meeting. As a result of the discussions, the association went on record in its resolutions as being against the misbranding of both green and roasted coffee; favored the creation of a United States board of coffee experts; and the establishment of an association trade-mark bureau.

For the ensuing year Ross W. Weir, New York, was chosen president; J. O. Cheek, Nashville, first vice-president; T. F. Halligan, Davenport, second vice-president; and W. T. Morley, Worcester, treasurer.

The decision to get together on a comprehensive national publicity campaign in the interest of coffee was the outstanding feature of the fifth annual convention, which was held in St. Louis, November 8 - 11, 1915, in the same room in the Planters Hotel in which the association was organized in 1911. From a body of twenty-six roasters, the association had grown in five years to a membership of 201 firms and individuals.

Among the more important things done at this convention was the decision to undertake a practical publicity plan to advertise coffee; the adoption of a uniform cost-and-freight contract; the proposal to prepare educational matter on coffee for the schools; and the recommendation to employ a chemist to carry on research work. There were spirited discussions also on gas, coal, and coke as roasting fuels; on the best way to get retailer co-operation, and whether it was advisable to continue the national coffee week idea. President Weir, Vice-Presidents Cheek and Halligan, and Treasurer Morley were re-elected.

The sixth annual convention, held in Atlantic City, November 14 - 17, 1916, placed emphasis on research into grinding and brewing; on plans for doing something practical to help grocers regain their lost coffee trade; and on an investigation into the scientific costs of roasting. The admittance of green coffee and allied interests into the association was also discussed, and it was resolved to make the subject an order of business for special consideration at the next convention.

At this meeting Frank R. Seelye, Chicago, was elected president; Ben C. Casanas, New Orleans, first vice-president; J. M. McFadden, Dubuque, second vice-president; and M. H. Gasser, Toledo, treasurer. The membership was reported as being 204, showing a net increase of three during the year.

The seventh convention, held in Chicago, November 14 - 15, 1917, came when the first movement of American soldiers to European battlefields was begun, and patriotism was the keynote of the meeting. Because of the stress of the times, the program was cut to two days, instead of the three days of former meetings.

The outstanding features of the convention were: the decision not to admit green coffee men to the association; the decision to establish a permanent headquarters; the announcement that Brazil was then collecting funds for its part in the national advertising campaign; and the proposal by John E. King, Detroit, that the term "lead number" be used instead of "caffetannic acid", which he asserted was a misnomer. The executive committee was authorized to employ a secretary-manager. The shorter terms and credits idea was endorsed by the association.

These officers were elected for the next year; Ben C. Casanas, New Orleans, presi-

dent; S. H. Holstad, Minneapolis, first vice-president; Edward Aborn, New York, second vice-president; M. H. Gassar, Toledo, treasurer.

The influenza epidemic, which swept the country the latter part of 1918, caused the postponement of many business and public gatherings, and the eighth annual roasters convention did not assemble until December 5 - 6, in Cleveland — at only ten days' notice. Unlike previous occasions, this was in reality a combined convention of all roasted and green coffee men in the trade, both association members and non-members. No regular program was followed, the meeting being somewhat in the character of a trade conference.

The salient features of the convention were the decisions: to double the annual dues, in order to provide for a paid secretary-manager and to establish permanent headquarters; to organize a spice grinders' section; and to ask the government to remove all restrictions on coffee trading. The Food Administration's coffee regulations came in for severe criticism.

The election of officers resulted in Carl W. Brand, Cleveland, becoming president; Robert M. Forbes, St. Louis, first vice-president; J. A. Folger, San Francisco, second vice-president; and Lewis Sherman, Milwaukee, treasurer.

The ninth convention of the National Coffee Roasters Association was of greater import to all branches of the coffee trade than any that had preceded it. The results of the meeting showed the association had gone far since the organization meeting in St. Louis in 1911. As in 1916, the convention was held in Atlantic City, November 12 - 14, 1919, and drew delegates from as far west as San Francisco and Seattle.

The most important subjects before the meeting were the reports of the Joint Coffee Trade Publicity Committee, read by Ross W. Weir, chairman, and Felix Coste, secretary-manager. The committee had been organized during the year to carry on the national coffee-advertising campaign, and announced at the convention its publicity plans for the next year, which included a national coffee week, a national showing of the committee's coffee film, and the issuance of several educational booklets. Other outstanding features included the description of how the association planned to conduct a research into the cost of doing a wholesale coffee-roasting business, the investigation to be made by Columbia University; addresses attacking the meat packers' invasion of the coffee roasting and distributing field; a paper, and discussions, on shorter terms and uniform discounts; the recommendation to employ a traveling field secretary who would hold periodical meetings with local branches; and the condemnation of guaranteeing prices against decline and giving advance notices of changes of prices.

The convention unanimously agreed to the re-election of President Brand, Vice-Presidents Forbes and Folger, and Treasurer Sherman.

The tenth annual meeting was held in St. Louis, November 10 - 12, 1920. Scientific cost finding, short terms and discounts, the national advertising campaign, the activities of the N. C. R. A. freight-forwarding bureau, and laboratory-research were the main topics of this years' gathering. The membership was reported to be 310. A feature of the meeting was the first industrial exhibit by twenty-five supply houses. Among the things accomplished were:

The recommendation that members cooperate in determining the invisible supply of coffee in the United States at stated periods; increasing annual dues from $50 to $60 for members having $50,000 or less capitalization, and from $100 to $120 for firms having more than $50,000 capital; restricting membership to purely wholesale coffee roasters and distributers; and offering co-operation to hotel-men and restaurant-keepers in standardizing and improving their coffee beverages.

The St. Louis meeting was notable in violating association precedent by unanimously electing Carl W. Brand president for the third consecutive term. Other officers were: J. A. Folger, San Francisco, first vice-president, R. O. Miller, Chicago, second vice-president; Charles A. Clark, Milwaukee, treasurer.

The eleventh annual meeting, held in New York, November 1 - 3, 1921, set the high-water mark of the organization's record of achievement. This convention took the first definite steps toward the amalgamation of the green and roasted coffee interests in one association. Brazil sent a delegation of coffee men to invite a similar delegation to pay a return visit to Brazil.

JOEL O. CHEEK, NASHVILLE
President of the National Coffee Roasters Association, 1922

It was announced also that São Paulo was about to double its tax contribution to the national advertising campaign. Among other things done, were: the appropriation of $1500 to work out a uniform cost-accounting system for roasters; the recommendation that coffee importers insist upon the use of American ships by Brazilian exporters; the formulation of a cost-and-freight arbitration contract for use with São Paulo exporters; the formation of a new membership class roasting up to 6000 bags a year; and the decision to make a national campaign to put the selling of coffee on a uniform thirty-days credit, two percent cash in ten days basis. Professor S. C. Prescott, reporting on the research work being done at the Massachusetts Institute of Technology, said a better brew of coffee could be obtained at a temperature of 185 degrees than at the boiling point; that glass, china, or enameled-ware pots were to be preferred, and that the filtration method is superior to that employed in the pumping percolator.

The Industrial Exposition included displays by twenty-eight manufacturers of machinery and supplies, and was voted a success. Many of the exhibits were of a distinctly educational character.

The following officers were elected for 1921-22: President, Joel O. Cheek, Nashville, Tenn.; first vice-president, Webster Jones, San Francisco; second vice-president, Joseph E. Maury, Memphis, Tenn.; treasurer, Frank Ennis, Kansas City.

Coffee Roaster Statistics

As might be expected, considering the leading place that New York holds as a port of entry for coffee, the roasting and grinding of coffee is more important in the eastern section of the country than in any other. But there are many establishments for preparing coffee scattered throughout the south and the middle west, and the business has grown to considerable proportions on the Pacific coast. New York state leads in number of establishments and is followed by Pennsylvania, California, Missouri, Ohio, and Illinois. The chief southern state is Texas, followed by Louisiana and Kentucky, although Maryland and

COFFEE AND SPICE ROASTING AND GRINDING ESTABLISHMENTS — CENSUS OF 1914

States	*Number*	*Capital*	*Value of product*
Alabama	8	$155,000	$331,000
California	43	3,619,000	9,584,000
Colorado	9	445,000	1,168,000
Connecticut	7	136,000	435,000
Dist. of Col.	5	294,000	428,000
Florida	19	219,000	697,000
Georgia	6	80,000	169,000
Illinois	34	8,159,000	22,045,000
Indiana	12	941,000	1,790,000
Iowa	14	1,752,000	3,804,000
Kansas	6	144,000	396,000
Kentucky	17	541,000	1,561,000
Louisiana	17	1,657,000	4,241,000
Maryland	14	1,643,000	4,393,000
Massachusetts	21	3,678,000	8,675,000
Michigan	16	502,000	1,618,000
Minnesota	11	1,531,000	4,729,000
Mississippi	5	27,000	94,000
Missouri	37	6,152,000	14,299,000
Nebraska	6	405,000	1,262,000
New Jersey	17	828,000	3,451,000
New York	136	9,910,000	31,675,000
Ohio	35	6,578,000	13,312,000
Oklahoma	6	191,000	757,000
Oregon	9	757,000	2,050,000
Pennsylvania	77	2,454,000	6,967,000
Tennessee	7	465,000	1,648,000
Texas	36	970,000	3,326,000
Virginia	9	413,000	1,137,000
Washington	25	1,023,000	2,237,000
West Virginia	3	73,000	71,000
Wisconsin	8	362,000	809,000
Other states	21	492,000	1,590,000
Total	696	$56,596,000	$150,749,000

Louisiana lead in value of product. Missouri has more plants than any other state in the middle west, and is followed by Illinois, though the capital invested and the value of the output are much greater in the latter than in the former.

The distribution of the business of preparing coffee is shown by the figures of the Census Bureau, which reports for 1914 a total of 696 establishments under the designation "Coffee and spice, roasting and grinding." It was found to be necessary to adopt this classification inasmuch as most establishments handle both coffee and spices. Of the 696, however, 658 had coffee as their principal product, and the figures may thus be taken as indicating fairly well the general distribution of the coffee-manufacturing industry. These figures, for the various states, are shown on page 515.

Preliminary figures for the 1919 census show that the value of the product almost doubled in the five years 1914 - 19, amounting to $304,740,000 in 1919, while the number of establishments increased from 696 to 794, of which 769 specialize in coffee.

Chapter XXXI

SOME BIG MEN AND NOTABLE ACHIEVEMENTS

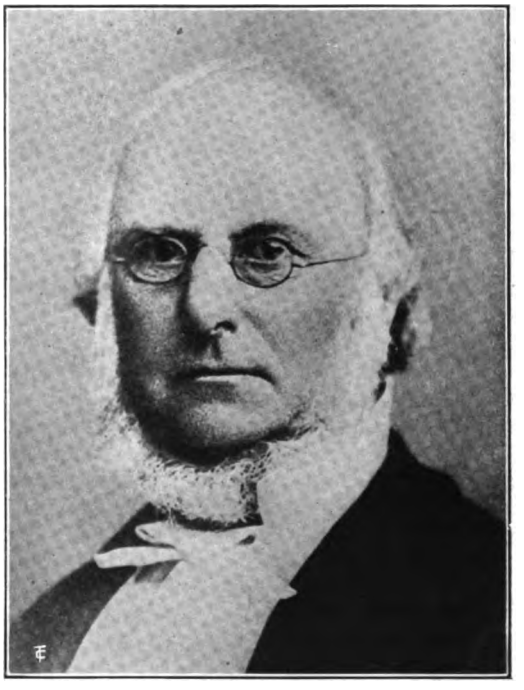
B. G. Arnold, the first, and Hermann Sielcken, the last of the American "coffee kings" — John Arbuckle, the original package-coffee man — Jabez Burns, the man who revolutionized the roasted coffee business by his contributions as inventor, manufacturer, and writer — Coffee-trade booms and panics — Brazil's first valorization enterprise — War-time government control of coffee — The story of soluble coffee

IN the history of the coffee trade of the United States, several names stand out because of sensational accomplishments, and because of notable contributions made to the development of the industry. In green coffee, we have B. G. Arnold, the first, and Hermann Sielcken the last, of the "coffee kings"; in the roasting business, there was John Arbuckle, the original national-package-coffee man; and in the coffee-roasting machinery business, Jabez Burns, inventor, manufacturer, and writer.

The First "Coffee King"

Benjamin Green Arnold came to New York from Rhode Island in 1836 and took a job as accountant with an east-side grocer. He was thrifty, industrious, and kept his own counsel. He was a born financial leader. Fifteen years later he was made a junior partner in the firm. By 1868, the bookkeeper of 1836 was the head of the business, with a line of credit amounting to half a million dollars — a notable achievement in those days.

Mr. Arnold embarked upon his big speculation in coffee in 1869. For ten years he maintained his mastery of the market, and in that time amassed a fortune. It is related that one year's operations of this daring trader yielded his firm a profit of a million and a quarter of dollars.



Benjamin Green Arnold

B. G. Arnold was the first president of the New York Coffee Exchange. He was one of the founders of the Down Town Association in 1878. The president of the United States was his friend, and a guest

at his luxurious home. But the high-price levels to which Arnold had forced the coffee market started a coffee-planting fever in the countries of production. Almost before he knew it, there was an overproduction that swamped the market and forced down prices with so amazing rapidity that panic seized upon the traders. Few that were caught in that memorable coffee maelstrom survived financially.

Arnold himself was a victim, but such was the man's character that his failure was regarded by many as a public misfortune. Some men differed with him as to the wisdom of promoting a coffee corner, and protested that it was against public policy; but Arnold's personal integrity was never questioned, and his mercantile ability and honorable business dealings won for him an affectionate regard that continued after his fortune had been swept away.

After the collapse of the coffee corner, Mr. Arnold resumed business with his son, F. B. Arnold. He died in New York, December 10, 1894, in his eighty-second year. The son died in Rome in 1906. The business which the father founded, however, continues today as Arnold, Dorr & Co., one of the most honored and respected names in Front Street.

Hermann Sielcken, the Last Coffee King

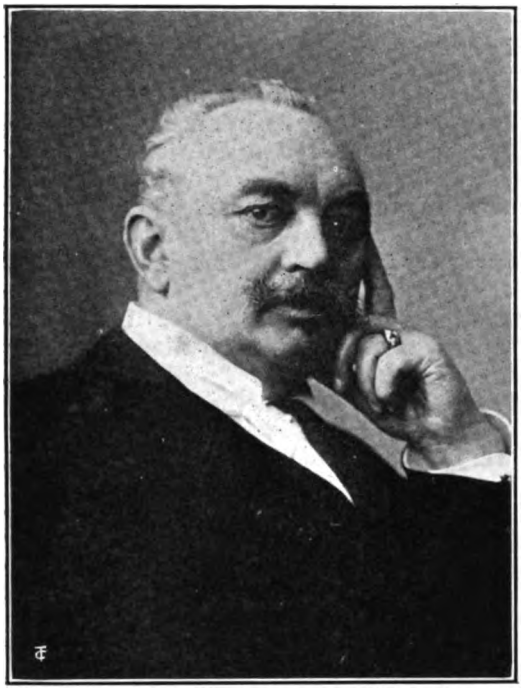
If B. G. Arnold was first coffee king, Hermann Sielcken was last, for it is unlikely that ever again, in the United States, will it be possible for one man to achieve so absolute a dictatorship of the green coffee business.

There never was a coffee romance like that of Hermann Sielcken's. Coming to America a poor boy in 1869, forty-five years later, he left it many times a millionaire. For a time, he ruled the coffee markets of the world with a kind of autocracy such as the trade had never seen before and probably will not see again. And when, just before the outbreak of the World War, he returned to Germany for the annual visit to his Baden-Baden estate, from which he was destined never again to sally forth to deeds of financial prowess, his subsequent involuntary retirement found him a huge commercial success, where B. G. Arnold was a colossal failure. It was the World War and a lingering illness that, at the end, stopped Hermann Sielcken. But, though he had to admit himself bested by the fortunes of war, he was still undefeated in the world of commerce. He died in his native Germany in 1917, the most commanding, and the most cordially disliked, figure ever produced by the coffee trade.

Hermann Sielcken was born in Hamburg in 1847, and so was seventy years old when he died at Baden-Baden, October 8, 1917. He was the son of a small baker in Hamburg; and before he was twenty-one, he went to Costa Rica to work for a German firm there. He did not like Costa Rica, and within a year he went to San Francisco, where, with a knowledge of English already acquired, he got a job as a shipping clerk. This was in 1869. A wool concern engaged him as buyer, and for about six years he covered the territory between the Rockies and the Pacific, buying wool. On one of these trips he was in a stage-coach wreck in Oregon and nearly lost his life. He received injuries affecting his back from which he never fully recovered, and which caused the stooped posture which marked his carriage through life thereafter. When he recovered, he came to New York seeking employment, and obtained a clerical position with L. Strauss & Sons, importers of crockery and glassware. In 1880, married Josephine Chabert, whose father kept a restaurant in Park Place.

Sielcken had learned Spanish in Costa Rica, and this knowledge aided him to a place with W. H. Crossman & Bro. (W. H. and George W. Crossman) merchandise commission merchants in Broad Street. He was sent to South America to solicit consignments for the Crossmans, and was surprisingly successful. For six or eight months every South American mail brought orders to the house. Then, as the story goes, his reports suddenly ceased. Weeks and months passed, and the firm heard nothing from him.

The Crossmans speculated concerning his fate. It was thought he might have caught a fever and died. It was almost impossible to trace him; at the same time it distressed them to lose so promising a representative. Giving up all hope of hearing from him again, they began to look around for some one to take his place. Then, one morning, he walked into the office and said, "How do you do?" just as if he had left them only the evening before. The members of the firm questioned him eagerly. He an-



HERMANN SIELCKEN

swered some of their questions; but most of them he did not. Then he laid a package on the table.

"Gentlemen", he said, "I have given a large amount of business to you, far more than you expected, as the result of my trip. I have a lot more business which I can give to you. It's all in black and white in the papers in this package. I think any person who has worked as hard as I have, and so well, deserves a partnership in this firm. If you want these orders, you may have them. They represent a big profit to you. Good work deserves proper reward. Look these papers over, and then tell me if you want me to continue with you as a member of this firm."

After the Crossmans had looked those papers over they had no doubt of the advisability of taking Sielcken into partnership. He was admitted as a junior in 1881-82 and became a full partner in 1885. For more than twenty years Hermann Sielcken was the human dynamo that pushed the firm forward into a place of world prominence. He was the best informed man on coffee in two continents; and when, in 1904, the firm name was changed to Crossman & Sielcken — W. H. Crossman having died ten years before — he was well prepared to assert his rights as king of the trade. He proved his kingship by his masterful handling of valorization three years later.

Sielcken was many times credited with working "corners" in coffee; but he would never admit that a corner was possible in anything that came out of the ground; and to the end, he was insistent in his denials of ever having cornered coffee. As a daring trader, he won his spurs in a sensational tilt with the Arbuckles in the bull campaign of 1887. Because of this, he became one of the most feared and hated men in the Coffee Exchange. For a while, coffee did not offer enough play for his tremendous energy and ambition. He embarked in various enterprises — among them, the steel industry and railroads. No one was too big for Sielcken to cross lances with. He bested John W. Gates in a titanic fight in American Steel and Wire. He quarreled with E. H. Harriman and George J. Gould over the possession of the Kansas City, Pittsburgh, and Gulf Railroad, now known as the Kansas City Southern, and, backed by a syndicate of Hollanders, obtained control.

While still busy with the Kansas City Southern enterprise Sielcken began work on the coffee valorization scheme that he carried to a successful conclusion in spite of the law of supply and demand and the interference of the Congress of the United States. Valorization by the São Paulo government, and by coffee merchants, having proved a failure; Sielcken showed how it could be done with all the American coffee merchants eliminated — except himself. In this way, he secured for himself the opportunity he had long been seeking — the chance to bestride the coffee trade like a colossus. The story is told farther along in this chapter.

When his partner, George W. Crossman, died in 1913, it was discovered that the two men had a remarkable contract. Each had made a will giving one million dollars to the other. Then Sielcken bought his late partner's interest in the firm for $5,166,991.

His first wife having died at Mariahalden, his home in Baden-Baden, seven years before, Sielcken married at Tessin, Germany, in 1913, Mrs. Clara Wendroth, a widow with two children, and the daughter of the late Paul Isenberg, a wealthy sugar planter of the Hawaiian Islands. At

that time the coffee king was dividing his time between the Waldorf-Astoria, New York, which he called his American home, and his wonderful estate in the fatherland. This latter was a two-hundred-acre private park containing four villas and a marvelous bath-house for guests besides the main villa; a rose-garden in which were cultivated one hundred sixty-eight varieties on some twenty thousand bushes; a special greenhouse for orchids; and landscaped grounds calling for the service of six professional gardeners and forty assistants. Here he delighted to entertain his friends. Frequently, there were fifteen to twenty of them for dinner on the garden terrace; and, as the moon came up through the tall hemlocks and shone through the majestic pines brought from Oregon, a full military band from Heidelberg, adown the hillside among the rose trees, mingled its music with the dinner discussions. There was nothing at that dinner table but peace and harmony, although every language in Europe was spoken; for Sielcken knew them all from his youth. Sometimes he entertained his guests with stories of his California life, and sometimes with those of shipwrecks in South America.

All the post-telegraph boys in Baden knew every foot of the sharply winding road up the Yburg Strasse to Villa Mariahalden; and the guests therein have counted more than eighty cables received, and more than thirty sent in a single day. And those daily cable messages were to and from all quarters of the globe, and to and from the master, who handled them all, without even a secretary or typewriter. Nowhere in the entire establishment was there even an appearance of business, except as the messages came and went on the highway. Sielcken manifested his greatest delight in showing his friends his orchids, his roses, his pigeons, his trout, and his trees.

Like Napoleon, this merchant prince required only five hours sleep. It was his custom to go to bed at one and to be up at six. Did he wish to know anything that the cables did not bring him, he jumped into his eighty-horse-power Mercedes with a party of guests and was off with the sunrise, down the Rhine Valley, on his way to Paris or Hamburg; and before one realized that he was gone, he was back again.

In 1913, Sielcken admitted to partnership in his firm two employees of long service, John S. Sorenson and Thorlief S. B. Nielsen. He went to Germany in 1914, shortly before the beginning of the World War, and remained at Mariahalden until he died in 1917. Sielcken never would believe that war was possible until it had actually started. Up to the last moment in July, 1914, he was cabling his New York partner that there would probably be no hostilities. He lost a bet of a thousand pounds made with a visiting Brazilian friend a few days before war was declared. The guest believed war inevitable and won. A few days before Sielcken's death the old firm was dissolved under the Trading with the Enemy Act, being succeeded by the firm of Sorenson & Nielsen. The former had been with the business thirty-four years, and the latter thirty-two years. The alien property custodian took over Sielcken's interest for the duration of the war.

Rumors in 1915 that the German government was extorting large sums of money from Sielcken brought denials from his associates here. After the war, it was confirmed that no such extortions took place.

Sielcken always claimed American citizenship. There was a widely circulated story, never proved, that he tore up his citizenship papers in 1912 when the United States government began its suit to force the sale of coffee stocks held here under the valorization agreement. The Supreme Court of California in 1921 decided that he *was* a citizen, and his interests and those of his widow, amounting to $4,000,000, held by the alien property custodian, were thereupon released to his heirs. It appeared in evidence that he took out his citizenship papers in San Francisco in 1873 - 74, but lost them in a shipwreck off the coast of Brazil in 1876. The San Francisco fire destroyed the other records; but under act of legislature re-establishing them, the citizenship claim was declared valid.

Hermann Sielcken never liked the title of "coffee king." He was once asked about this appellation, and turned smartly upon the interviewer.

"Nonsense," he said. "I am no king. I don't like the term, because I never heard of a 'king' who did not fail."

Sielcken had no use for titles. T. S. B. Nielsen says that at a dinner party in Ger-

many in 1915 he heard Sielcken explain to a large number of guests that the United States was the best country because there a man was appraised at his real value. What he did, and how he lived, counted — not birth or titles.

While his greatest achievement was, of course, the valorization enterprise, he played a not unimportant rôle in the Havemeyer-Arbuckle sugar-trust fight. He aided the late Henry O. Havemeyer to secure control of the Woolson Spice Co. of Toledo in 1896, so as to enable the Havemeyer's to retaliate with Lion brand coffee for the Arbuckles' entrance into the sugar business. The Woolson Spice Co. sold the Lion brand in the middle west, and the American Coffee Co. sold it in the east. That was the beginning of a losing price-war that lasted ten years. At the end, Sielcken took over the Woolson property at a price considerably lower than originally paid for it. In 1919, the Woolson Spice Co. brought suit against the Sielcken estate, alleging a loss of $932,000 on valorization coffee sold to it by Sielcken just after the federal government began its suit in 1912 to break up the valorization pool in the United States. The Woolson Spice Co. paid the "market price", as did the rest of the buyers of valorization coffee; but it was charged that Sielcken, as managing partner of Crossman & Sielcken, sold the coffee to the Woolson Spice Co., of which he was president, "at artificially enhanced prices and in quantities far in excess of its legitimate needs, concealing his knowledge that before the plaintiff could use the coffee, the price would decline." Sielcken collected for the coffee sold $3,218,666.

When the United States government crossed lances with Sielcken in 1912 over the valorization scheme, it looked for a time as if he would be unhorsed. But men and governments were all the same to Sielcken; and at the end of the fight it was discovered that not only was he undefeated — for the government never pressed its suit to conclusion — but that his prestige as king and master mind of the coffee trade had gained immeasurably by the adventure.

Hermann Sielcken typified German efficiency raised to the nth power. He was a colossus of commerce with the military alertness of a Bismarck. His mental processes were profound, and his vision was far-reaching. He was a resourceful trader, an austere friend, a shrewd and uncompromising foe. Physically, he was a big man with a bull neck and black, piercing eyes. His policy in coffee was one of blood and iron. He brooked no interference with his plans, and he was ruthless in his methods of dealing with men and governments. Usually silent and uncommunicative, occasionally he exploded under stress; and when he did so, there was no mincing of words. He knew no fear. Newspaper criticism annoyed him but little; and he had a kind of contempt for the fourth estate as a whole, although he knew how to use it when it suited his purpose. He avoided the limelight, and never courted publicity for himself. Socially he was a princely host; but few knew him intimately, except perhaps in his native Germany.

Sielcken's widow was married in New York, February 11, 1922, to Joseph M. Schwartz, the Russian baritone of the Chicago Opera Company.

The Story of John Arbuckle

John Arbuckle, for nearly fifty years the honored dean of the American coffee trade, pioneer package-coffee man, some time coffee king, sugar merchant, philanthropist, and typical American, came from fine, rugged Scotch stock. He was the son of a well-to-do Scottish woolen-mill owner in Allegheny, Pa., where he was born, July 11, 1839. He often said he was raised on skim milk. He received a common school education in Pittsburgh and Allegheny. He and Henry Phipps, the coke and steel head, are said to have occupied adjoining desks in one of the public schools, Andrew Carnegie being at that time in another grade of the same school. He had a strong bent for science and machinery; and, although he chose the coffee instead of the steel business for his career, the basis of his success was invention. He also attended Washington and Jefferson College at Washington, Pennsylvania.[1]

The Arbuckle business was founded at Pittsburg, in 1859, when Charles Arbuckle, his uncle Duncan McDonald, and their friend William Roseburg, organized the wholesale grocery firm of McDonald & Arbuckle. One year later John Arbuckle, the younger brother of Charles Arbuckle, was

[1] Much of the information that follows is from an article by M. E. Goetzinger in the *Percolator*, February, 1921.

admitted to the firm, and the firm name was changed to McDonald & Arbuckles. McDonald and Roseburg retired from the firm a few years later, leaving the business in the hands of the two youthful, hopeful, and energetic brothers, who under the firm name of Arbuckles & Co., soon made their firm one of the important wholesale grocery houses in Pennsylvania. Although little thinking at the time that their greatest success was to be achieved in coffee, and that a new idea of one of the partners — that of marketing roasted coffee in original packages — would make their name familiar in every hamlet in the country, yet the first two entries in the original day-book of McDonald & Arbuckles record purchases of coffee.

Prior to the sixties, coffee was not generally sold roasted or ground, ready for the coffee pot. Except in the big cities, most housewives bought their coffee green, and roasted it in their kitchen stoves as needed. John Arbuckle, having become impressed with the wasteful methods and unsatisfactory results of this kitchen roasting, had already begun his studies of roasting and packaging problems, studies that he never gave up. How, first to roast coffee scientifically, and then to preserve its freshness in the interval between the roaster and the coffee pot, continued to be an absorbing study until his death. The range of his work may be illustrated by reference to his first and his last patents. In 1868, he patented a process of glazing coffee, which had for its object the preservation of the flavor and aroma of coffee by sealing the pores of the coffee bean. Thirty-five years later, he patented a huge coffee roaster in which, more closely than in any other roaster, he felt he could approach his ideal of roasting coffee — that ideal being to hold the coffee beans in suspension in super-heated air during the entire roasting process, and not to allow them to come in contact with a heated iron surface.

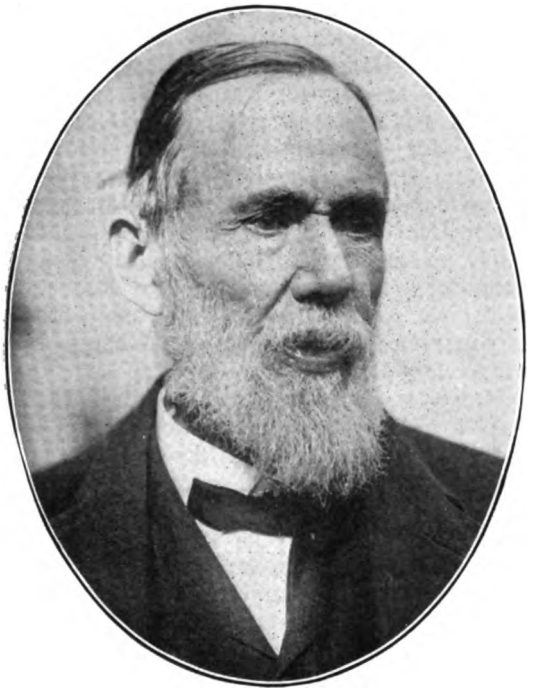
By 1865, John Arbuckle had satisfied himself that a carefully roasted coffee, packed while still warm in small individual containers, would measurably overcome the objections to selling loose coffee in a roasted state. So in that year (1865), although not without the misgivings of his elder brother, and even in the face of the ridicule of competitors, who derided the plan of selling roasted coffee "in little paper bags like peanuts", Arbuckles & Co. introduced the new idea, namely, roasted coffee in original packages. The story of the development of that simple idea, which soon spread from coast to coast, and of how it laid the foundations of a great fortune, is one of the romances of American business.

Although Osborn's Celebrated Prepared Java Coffee, a ground-coffee package, first put on the New York market by Lewis A. Osborn, and later exploited by Thomas Reid in the early sixties, appears to have been the original package coffee, much of the fame attached to the name of Arbuckle comes from its association with the Ariosa coffee package, which was the first successful national brand of package coffee. It was launched in 1873. The Ariosa premium list (premiums have been a feature of the Arbuckle business since 1895) includes a hundred articles. Almost anything from a pair of suspenders or a toothbrush, to clocks, wringers, and corsets may be obtained in exchange for Ariosa coupons.

The common belief that the name Ariosa was made up from the words Rio and Santos (said to be the component parts of the original blend) is erroneous. It was arbitrarily coined, though it is not known what considerations prompted it. One story has it that the "A" stands for Arbuckle, the "rio" for Rio, and the "sa" for South America.

Early in the seventies, the great business opportunities of New York City had attracted the two brothers, and a branch was established in New York in charge of John Arbuckle, the main business in Pittsburg being left in the care of his brother Charles. The growth of the New York branch soon made it necessary for Charles Arbuckle to leave the Pittsburg business in charge of trusted employees, and to come to New York. In time, the coffee business of the New York house overshadowed the grocery lines; and the latter were abandoned there, so that the entire energy of the firm in New York might be devoted to the coffee business, which thenceforth was operated under the firm name of Arbuckle Bros. The Arbuckle coffee business, which began with a single roaster in 1865, had eighty-five machines running in Pittsburg and New York in 1881.

Charles Arbuckle died in 1891, and John Arbuckle admitted as partners his nephew,



JOHN ARBUCKLE

William Arbuckle Jamison, and two employees, William V. R. Smith and James N. Jarvie, the business continuing under the former name of Arbuckle Bros. The most important step taken by the firm while thus constituted was its entrance into the sugar refining business in 1896. That entrance had to be forced against the bitterest opposition of a so-called sugar trust, and brought on a "war" signalized by the most ruthless cutting of prices of both coffee and sugar. This war was costly to both sides; but when it had ended, Arbuckle Bros. remained unshaken in the preeminence of their package-coffee business and had acquired also great publicity and a fine trade in refined sugar.

Arbuckles were always large consumers of sugar in connection with their coffee glaze, and having introduced the package sugar idea with their customers some years before, they at last made up their minds to refine for their own needs and thus to save the profits paid to "the Havemeyers". It is generally conceded that John Arbuckle's shrewdness and business sagacity in having previously acquired the Smyser patents on a weighing and packing machine, and his control of it, really led to the coffee-sugar war. "This packing machine", said the *Spice Mill*, when Henry E. Smyser died in 1899, "puts him [Smyser] with the greatest inventors of our day."

The sugar trust met the Arbuckle challenge by invading the coffee-roasting field. This they accomplished by securing a controlling interest for $2,000,000 in one of the largest competing roasting plants in the country, that of the Woolson Spice Co., of Toledo, Ohio, that had in the Lion brand, a ready-made package coffee wherewith to fight Ariosa. The re-organization of the Woolson Spice Co. in 1897, when A. M. Woolson was relieved of the office of president, disclosed, among others, the names of Hermann Sielcken in close juxtaposition to that of H. O. Havemeyer on the board of directors. Both men helped to make coffee-trade history.

The trade found the coffee-sugar war the all-absorbing topic for several years. Hot debates were held on the question as to whether, on one hand, the Arbuckles had the right to enter the sugar-refining business and, on the other, as to whether the sugar-trust had a right to retaliate. The answer seemed to be "yes" in both instances.

In two years, John Arbuckle's model sugar refinery in Brooklyn was turning out package sugar at the rate of five thousand barrels a day. The Woolson Spice Co. was credited with spending unheard-of sums of money in advertising Lion brand coffee. The eastern newspaper displays alone exceeded anything ever before attempted in this line. However, many people are of the opinion that it was a tactical error on the part of the sugar interests to spend so much money advertising a Rio coffee in the central and New England states, while John Arbuckle was confining his activities to the south and the west, where there already existed a Rio taste among consumers.

The legal fight which the Arbuckles carried on with the Havemeyers for the control of the sugar business in this celebrated coffee-sugar war is said to have cost millions on both sides.

Eventually, the Havemeyers were glad to be relieved of their coffee interests, but John Arbuckle continued to sell both coffee and sugar.

Mr. Arbuckle married Miss Mary Alice Kerr in Pittsburg, in 1868. She died in 1907 His many charities included boat

trips for children, luxurious farm vacations for tired wage-earners, boat-raising and life-saving schemes, a low-priced home for working girls and men on an old full-rigged ship lying off a New York dock, which he called his "Deep Sea Hotel," and a vacation enterprise for young men and young women at New Paltz, N. Y., which was known as the "Mary and John Arbuckle Farm." A magazine for children, called *Sunshine,* was another benevolent enterprise of his.

When John Arbuckle died at his Brooklyn home, March 27, 1912, he had been ill only four days. The New York Coffee Exchange closed at two o'clock the day following, after adopting appropriate resolutions and appointing a committee to attend the funeral. His estate in New York was valued at $33,000,000.

W. V. R. Smith and James N. Jarvie retired from the firm in 1906; and John Arbuckle and his nephew W. A. Jamison continued it as sole owners and partners until Mr. Arbuckle's death in 1912. Mr. Arbuckle died childless and a widower, leaving as his only heirs his two sisters, Mrs. Catherine Arbuckle Jamison and Miss Christina Arbuckle. Mrs. Jamison is the widow of the late Robert Jamison, who had been a prominent drygoods merchant in Pittsburg. William A. Jamison is her eldest and only living son. Following the death of John Arbuckle, a new partnership was formed in which Mrs. Jamison, Miss Arbuckle, and Mr. Jamison became the partners and owners, and that partnership, without change of name, continues. Probably there is no other mercantile establishment of similar size in the country that is carried on as a partnership, and none which after more than sixty years is so exclusively owned by members of the immediate family of its founders.

The Arbuckle business, as it is today, is John Arbuckle's best monument. All that it is he foresaw; for behind those keen, penetrating eyes, there was wonderful vision. Simple in his tastes; democratic in his dress, in his habits and his speech; he was one of the most approachable of our first captains of industry. Many of the younger generation in the coffee business have found inspiration in contemplating John Arbuckle's achievements. As represented in what has been called "the world's greatest coffee business", these include other package coffees, such as Yuban, Arbuckle's Breakfast, Arbuckle's Drinksum, and Arbuckle's Certified Java and Mocha. The pioneer Ariosa brand is still being sold; although it is interesting to note that the demand for ground Ariosa is increasing, marking the swing of the pendulum of public taste away from the original bean package to the so-called "steel-cut," or ground, coffee package. Will it swing back again, some day? Many coffee men believe it will. If it does, good old Ariosa, with its coating of sugar and eggs, will no doubt be on the job to meet it.

Yuban was launched in the fall of 1913. It is a high-grade package coffee, whereas Ariosa is popular-priced. In addition to the package coffee business, Arbuckle Bros. have many other activities. They deal in green coffee as well as roasted coffee in bulk. The wholesale grocery business in Pittsburg continues under the old name of Arbuckles & Co.; while in Chicago, Arbuckle Bros. have a branch equipped with a coffee-roasting-and-packaging plant, also spice-grinding and extract-manufacturing plants, and do a large business in teas. A branch in Kansas City distributes the products manufactured in New York and Chicago. In Brazil, offices are maintained at Rio de Janeiro, Santos, and Victoria, as Arbuckle & Co. In Mexico, Arbuckle Bros. are established at Jalapa, with branches at Cordoba and Coatepec. In season, the warehouses and hulling plants at those points employ as many as 650 hands preparing Mexican coffee for shipment to New York.

Arbuckle Bros. are direct importers of green coffee on a large scale, and are known also as heavy buyers "on the street." The roasting capacity of their Brooklyn plant is from 8,000 to 9,000 bags per day. The cylinder equipment of twenty-four Burns roasters is supplemented by four "Jumbo" roasters of Arbuckle build, each capable of roasting thirty-five bags at one time. The Ariosa package business grew from the smallest beginnings to more than 800,000 packages per day. Individual brands have not held their lead of late years; but the volume of package-coffee business is greater than ever. Many jobbers now pack brands of their own, besides handling the Arbuckle brands.

Distribution of roasted coffees outside Chicago and Kansas City is accomplished

through the medium of more than one hundred stock depots in as many different cities of the United States.

To operate the world's greatest coffee business is no small undertaking; and when this is coupled with an important sugar-refining business and a waterfront warehouse-and-terminal business, plenty of room is needed. So we find the plant along the Brooklyn waterfront occupying an area of a dozen city blocks. An idea of the extent and diversity of the activities of the plant may be gained from a brief reference to the utilities, and the trades, and even the professions, that are required to make the wheels go round.

To ship more than one hundred cars of coffee and sugar in a single day calls for shipping facilities that could be had only by organizing a railroad and waterfront terminal, known as Jay Street Terminal, equipped with freight station, locomotives, tugboats, steam lighters, car floats, and barges. City deliveries of coffee and sugar call for a fleet of thirty-five large motor trucks that are housed in the firm's own garage and kept in repair in their own shops. Although motor trucks are fast replacing the faithful horse; and the time will never come again when Arbuckle Bros. will boast of their stable of nearly two hundred horses that were generally acknowledged to be the finest string of draft horses in the city, some fifty or sixty of their faithful animals still are in harness; and so the stable, with blacksmith shop, harness shop, and wagon-repair shops, are serving their respective purposes, though on a reduced scale. A printing shop vibrates with the whirr of mammoth printing presses turning out thousands upon thousands of coffee-wrappers and circulars; and doubtless it will be news to many that the first three-color printing press ever built was expressly designed and built for Arbuckle Bros. Then there is a sunny first-aid hospital on top of the Pearl Street warehouse where a physician is ever ready to relieve sudden illness and accidental injuries. On the eleventh floor there is a huge dining room where the Brooklyn clerical forces get their noonday lunches. This feeding of the inner man (and woman) is matched by the power-house where twenty-six large steam boilers must be fed their quota of coal. In the winter months, when warmth must come for the workers as well as power for the wheels, the coal consumption runs up as high as four hundred tons per day.

The barrel factory, with a daily capacity of 6,800 sugar barrels, is located about a mile away, where barrel staves and heads are received from the firm's own stave mill in Virginia, made from logs cut on their own timber lands in Virginia and North Carolina. A more self-contained plant would be hard to imagine, and so we find that even the last activity in its operations — that of washing and drying the emptied sugar bags — is also provided for. That this is "some laundry" goes without saying, when it is recalled that in the busy sugar season the firm dumps from eight to ten thousand bags of raw sugar per day, and that these bags are washed and dried daily as emptied. A huge rotary drier of the firm's own design does the work of about three miles of clothes lines.

Even after the coffees have been sold and paid for, there still remains an important task, and that is to redeem the signature coupons which the consumers cut from the packages and return for premiums. Lest some regard this as an insignificant phase of the business, it may be stated that in a single year the premium department has received over one hundred and eight million coupons calling for more than four million premiums. These premiums included 818,928 handkerchiefs; 261,000 pairs of lace curtains; 238,738 shears; and 185,920 Torrey razors. Finger rings are perennial favorites, and so insistent is the demand for the rings offered as premiums, that Arbuckle Bros. are regarded as the largest distributors of finger rings in the world. One of their premium rings is a wedding ring; and if all the rings of this pattern serve their intended purpose, it is estimated that the firm has assisted at eighty thousand weddings in a year.

Turning from the utilities at the plant to the trades and professions represented, other than the trained sugar and coffee workers, the following are constantly employed: physicians, chemists, mechanical engineers, civil engineers, electrical engineers, railroad engineers and brakemen, steamboat captains and engineers, chauffeurs, teamsters, wagon-makers, harness-makers, machinists, draughtsmen, blacksmiths, tinsmiths, coppersmiths, coopers, carpenters, masons, painters, plumbers,

riggers, typesetters and pressmen, and last but not least, the chef and table waiters.

One of the most remarkable things about the growth of this business enterprise is that it is not the result of buying out, or consolidating with, competitors; but has resulted from a steady wholesome growth along conservative business lines. Consolidations are often desirable and effective; but when a great business has been built without any such consolidations, the conclusion is inevitable that somewhere in the establishment there must have been a corresponding amount of wisdom, foresight, energy, and honorable business dealing. Those were the things for which John Arbuckle stood firm, and for which he will always be remembered.

Jabez Burns, Inventor, Manufacturer, Writer

Jabez Burns was a person of real importance to the American coffee trade from 1864, when he began to manufacture his improved roaster, until his death, at the age of sixty-two, in 1888. His success depended more on unusual character than unusual ability, although he was really gifted as regards mechanical invention. He loved to acquire practical information, and arrived confidently at common-sense conclusions; and he exercised a wide and helpful influence, because he liked to give expression to opinions that he considered sound and useful.

Mr. Burns was born in London in 1826. The family moved soon after to Dundee, Scotland, and came to New York in 1844. They were people of small means and independent thinking. The father, William G. Burns, had been more interested in the Chartist social movement than in any settled business activity. An uncle, also named Jabez Burns, became a popular Baptist preacher in London.

The first winter in America found youthful Jabez teaching a country school at Summit, N. J. Then he began in New York (1844-45) as teamster for Henry Blair, a prosperous coffee merchant who attended a little "Disciples" church in lower Sixth Avenue where many Scottish families congregated. There also Burns met Agnes Brown, daughter of a Paisley weaver, and married her in 1847. A brave young pair they were, who found all sorts of odd riches — just as if a fast-growing family could somehow make up for a slow-growing income. There were hopes, too, that the contrivances Burns kept inventing might bring wealth; and some extra money did come from the sale of early patents, including one in 1858 for the Burns Addometer, a primitive adding machine.

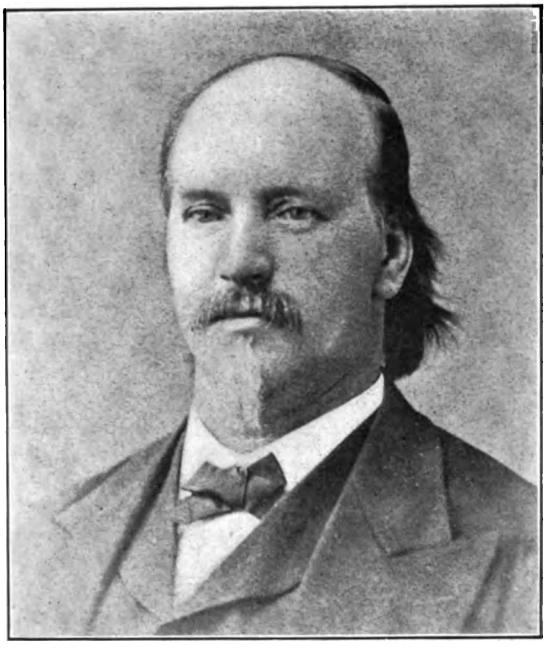
But Mr. Burns had continued regularly in the employ of coffee and spice firms, and at one time he was bookkeeper for Thomas Reid's Globe Mills. He advanced slowly, because he lacked real trading talent; but he was learning all about the handling of goods, from purchase to final delivery; and when he quit bookkeeping for the old Globe Mills, and began to build his patent roaster, he could advise clients reliably about every factory detail.

He was soon looked on as an authority. He wrote some articles for the *American Grocer,* a series on "Food Adulteration" being reprinted; and in 1878, he began the quarterly publication of his thirty-two-page *Spice Mill,* which soon became a monthly, and gained the interested attention of practically the entire coffee and spice trade.

Through the columns of this paper, in circulars, by letters, and in a pocket volume called the *Spice Mill Companion,* he distributed information on coffee, spices, and baking powder, and gave valuable advice to beginners in the coffee-roasting business. Not a few coffee roasters were started on the way to fortune by the counsel of Jabez Burns. He died in New York, September 16, 1888.

Jabez Burns founded the business of Jabez Burns & Sons in 1864, beginning the manufacture of his patent coffee roaster at 107 Warren Street, New York. Since then, there have been four removals. In December, 1908, the business moved to its present uptown location, at the northwest corner of Eleventh Avenue and Forty-third Street, occupying a six-story building which was doubled in size in 1917. This Burns factory has been referred to as "the unique coffee-machinery workshop", the greatest establishment of its kind in the United States.

Upon the death of its founder the business was continued; first, as the firm of Jabez Burns & Sons, composed of his sons, Jabez, Robert, and A. Lincoln Burns; and later, in 1906, incorporated as Jabez Burns & Sons, Inc., with Robert Burns as presi-



JABEZ BURNS

dent, Jabez Burns as vice-president, and A. Lincoln Burns as secretary and treasurer. Jabez Burns died August 6, 1908. The present officers are: Robert Burns, president; A. Lincoln Burns, vice-president; William G. Burns, general manager; and C. H. Maclachlan, secretary and treasurer.

A. Lincoln Burns succeeded his father as editor of the *Spice Mill*. William H. Ukers was made editor in 1902, and he continued until 1904, when he left to assume editorial direction of *The Tea and Coffee Trade Journal*.

Coffee-Trade Booms and Panics

In the last fifty years there have been many spectacular attempts to corner the coffee market in Europe and the United States. The first notable occurrence of this kind did not originate in the trade itself. It took place in 1873, and was known as the "Jay Cooke panic", being brought about by the famous panic of that name in the stock market.

As a result of the Jay Cooke failure, it was impossible to obtain money from the banks. Hence buyers were forced to keep out of the coffee market; and as a consequence, the price for Rios dropped from twenty-four cents to fifteen cents in the course of the trading period of one day[2].

Another interesting development during that year was of foreign origin. A coffee syndicate was organized in Europe, financed by the powerful German Trading Company of Frankfort, with agencies in London, Rotterdam, Antwerp, and Brazil. For more than eight years this proved to be a highly successful undertaking, largely controlling the principal producing and consuming markets.

As far as the American coffee trade is concerned, the first sensational upheaval took place in 1880-81. This period witnessed the collapse of the first great coffee trade combination in this country — the so-called "syndicate", comprising O. G. Kimball, B. G. Arnold, and Bowie Dash, sometimes known as the "trinity".

The period of high coffee prices, commencing in 1870, had greatly stimulated production in many Mild-coffee producing countries, as well as in Brazil, and as a consequence the syndicate found its burden becoming extremely heavy early in 1880. In January of that year our visible supply amounted roughly to 767,000 bags. While this was reduced to about 740,000 bags in July, the latter likewise proved to be decidedly burdensome, especially as another liberal crop was beginning to move in producing countries. The excessive volume of supplies was especially marked, because distributing trade during the summer was strikingly dull, as the majority of buyers were holding off, in view of the prospective liberal new crops. At that time Java coffee was a big item in American markets, whereas Santos was just about beginning to be a factor.

The syndicate found that it had its hands full supporting the Brazil grades, and hence had to let the Javas go. As a result, the latter, which had sold at twenty-four and three-quarters cents in January, 1880, fell to nineteen and one-half cents in July, to eighteen cents in November and to sixteen cents in December. As a matter of fact, the syndicate was practically the only buyer of Brazil coffee during the fall of 1880; and as a consequence, Rios, which had started the year at fourteen and one-

[2] What follows on "Trade Brooms and Panics" is from an article prepared, under the author's direction, by C. K. Trafton, and published in *The Tea and Coffee Trade Journal*, Nov., 1920 (vol. xxxix: no. 5: p. 563).

half to sixteen and one-quarter cents, were down to twelve and three-quarters cents in December, 1880, and had dropped nine and one-half cents when the break in the market culminated in June, 1881.

The first whispers of financial troubles growing out of these adverse conditions were heard in October, 1880; and on the 27th of that month the first failure was announced — that of C. Risley & Co., with liabilities placed at $800,000 and assets at $400,000. This firm had been doing business in the local market for about thirty years. The efforts of the receivers to dispose of this company's large stock naturally served to accelerate the decline; and the final impetus came on December 6, when the New York trade heard of the death, two days previously, of O. G. Kimball, of Boston, one of the most prominent merchants there. This precipitated the big crash of December 7, when B. G. Arnold & Co., the largest New York firm, suspended with estimated liabilities of $750,000 to $1,000,000. The official statement later placed the liabilities at $2,157,914, and assets at $1,400,000, of which $884,198 were secured. Within three days this failure was followed by the suspension of Bowie Dash & Co., with liabilities estimated at $1,400,000.

For weeks thereafter there was virtually no market. With all of these distress holdings pressing for liquidation, buyers, as was natural, were extremely timid. In the meantime, the import arrivals showed further enlargement at various southern ports, as well as at New York. Total arrivals at this port during 1881 were almost 12,400,000 pounds heavier than for the preceding year. The growing importance of Santos as a market factor was demonstrated by the fact that shipments from there in 1881 were 1,198,625 bags, compared with about 628,900 bags in 1876 - 77. According to the best informed members of the trade at that time, the losses sustained by the various firms that were forced to the wall aggregated between $5,000,000 and $7,000,000.

The utterly demoralized conditions prevailing while this collapse was in progress, and the practical elimination of a market in the true sense of the word, furnished the principal impetus for the organization of the New York Coffee Exchange. At that time, the Havre market was the only one with an exchange. The local body was organized in December, 1881, and started business in March, 1882.

The Cable Break of 1884

The second noteworthy movement, embracing an advance of four to four and one-half cents and a recession of slightly more than three cents, covered a period of about eight months shortly after the Exchange was organized. Various local and out-of-town firms were interested in the bulge which carried Rio coffee in this market from about seven cents in July, 1883, up to eleven and one-half cents late in November. By the middle of December, the price had fallen to nine and one-quarter cents, the final break to eight and one-quarter cents occurring late in March of the following year. At that time, there was no direct cable communication with Brazil; and as a result of a temporary break in the round-about service by way of Portugal, the New York and Baltimore agents of the Brazilian syndicate were unable to put up additional margins in this market, and their accounts were closed out. This happened on a Saturday; and by the following Monday, partial cable remittances arrived and all accounts were settled in full with interest from Saturday to Monday.

The Great Boom

What is generally described as "the great boom" of the coffee trade occurred in 1886 - 87, and had its inception in unsatisfactory crop news from Brazil. The crop of 1887-1888, it was estimated, would be extremely small; and it turned out to be only 3,033,000 bags. These advices and low estimates led to the formation of a "bull" clique, comprising operators in New York, Chicago, New Orleans, Brazil, and Europe, who set a price of twenty-five cents for December contracts as their goal. Toward the end of June, 1886, when this campaign started, No. 7 Rio in New York was worth about seven and one-half cents, with June contracts on the Exchange quoted at seven and sixty-five hundredths cents. With Brazilian crop news still more discouraging, the advance thereafter was almost continuous, and on June 1, 1887, December contracts sold at twenty-two and one-quarter cents — a new high price record, that was not exceeded for thirty-two years, when twenty-four and sixty-five hundredths cents were paid for July contracts

in June, 1919. After reaching twenty-two and one-quarter cents, prices suffered an abrupt reversal. Ten days later the closing price for December was twenty-one and four-tenth cents. Then the real crash began. On Saturday, June 11, the panic started with another claim of cable trouble; and in the short session, December coffee broke from twenty and fifteen-hundredths to eighteen and sixty-five hundredths cents, closing at a loss for the day of 275 points. The first sale of December on Monday was at seventeen and four-tenths cents, or 125 points lower; and after numerous erratic variations, the price broke to sixteen cents, a drop of six and one-quarter cents in less than two weeks. Business on that day was of enormous volume, in round numbers 412,000 bags; and approximately $1,500,000 was put up in margins. For the next three days the decline was temporarily halted, and December, at one time, was up three and one-quarter cents from the bottom (nineteen and one-quarter cents). On June 17, another battle commenced, December dropping back to seventeen cents. Then came a rally to eighteen and one-tenth cents, a drop to sixteen and one-half cents; another rally to eighteen and one-tenth, and, on June 24, another break to the previous low level of sixteen cents for December. This sharp reversal in less than a month was traceable largely to more favorable news from Brazil, the 1888 - 89 crop being estimated at 6,827,000 bags.

Following a rally to nineteen and six-tenths cents during the next month (July, 1887), the pendulum again swung downward. The climax came with the culmination of the "European fiasco" of the spring of 1888. Reports were received that various European coffee firms had failed; and future contracts in the American market sold as low as nine cents in March.

A Famous European Bull Campaign

The next campaign of interest lasted more than two and a half years. In September, 1891, there was a corner in the local market which forced the September price up to seventeen and one-quarter cents. George Kaltenbach, a wealthy speculator living in Paris, combining with three operators in Havre, Hamburg, and Antwerp, succeeded in breaking the corner, forcing the price down to ten and eight-tenths cents. They then changed to the bull side, buying heavily in all markets of the world. This was continued until early in 1893, bringing the price back to fifteen cents. Although his associates then returned to the bear side, Kaltenbach kept on buying; and aided by bad crop reports from Brazil, he worked the price up as high as seventeen and seven-tenths cents. At one time it was said that his profits were more than one million dollars. The collapse of this deal occurred in May, 1893, involving thirty firms in Hamburg, Havre, and Rotterdam. As Kaltenbach could not keep his large New York holdings margined, they were thrown on the market, bringing about a sharp break, and causing the failure of his New York agents, T. M. Barr & Co.

The present era of large crops began in 1894, Brazil's production for 1894 - 95 being placed at 6,695,000 bags. Nevertheless, Guzman Blanco, a former president of Venezuela, then living in Paris, and said to be worth about $20,000,000, attempted to run a corner in April, 1895. He bought 200,000 bags of spot coffee in Havre warehouses and accumulated a big line of futures in various markets. Assisted by reports of cholera in Rio and some reduction in Brazilian crops, he enjoyed temporary success, the price of Rio 7s in New York rising to fifteen and one-half cents in October, 1895. Thereafter, there was an almost continuous decline. In the spring of 1898, a vigorous bear campaign was conducted, largely in the form of market letters; and by November, Rio 7s here had dropped to four and one-half cents.

The Bubonic Plague Boom

The so-called "bubonic plague boom" halted this prolonged downward movement for a time in 1899 - 1900. The boom derived its name from the outbreak of bubonic plague in Brazil, as a result of which the ports of that country were quarantined. In addition, Brazilian steamers arriving at New York were placed in quarantine; and the impossibility of unloading their cargoes caused a temporary shortage. As a result, prices rose from four and one-quarter cents in September, 1899, to eight and one-quarter cents in July, 1900. The quarantine being lifted, the bears again became aggressive; and by April, 1901, they had forced the price back to five cents.

There was another short-lived attempt to establish a corner in September, 1901. Receipts at Rio and Santos had been running light, encouraging a local clique embracing Skiddy, Minford & Company; W. H. Crossman & Bro.; and Gruner & Company, to endeavor to gain control. The arrivals at Brazilian ports suddenly increased to the largest volume ever known up to that time; and, with vigorous opposition from operators in Havre, the corner here was speedily broken.

The opening of the new century witnessed the beginning of another new coffee era, Santos permanently displacing Rio as the world's largest source of supply. The figures for 1900 - 01 were: Santos, 2,945,000 bags; Rio, 2,413,000 bags.

Huge crops then became a regular thing in Brazil. That of 1901 - 02 was far in excess of estimates, being 15,000,000 bags; while 20,000,000 bags were produced in 1902 - 03. As a result, the world's coffee trade became completely demoralized for the time being. In August, 1902, contracts for July, 1903, delivery sold at six and one-tenths cents. By June, 1903, they had fallen to three and fifty-five hundredths cents, the lowest price ever recorded for coffee.

The Southern Boom

As is invariably the case when prices reach extreme levels, either high or low, the pendulum swung back rapidly in the other direction. Based on the unprecedentedly low prices, the so-called "cotton crowd" started what was generally known as "the southern boom". Various cotton traders in New York and the South, under the leadership of D. J. Sully, the one-time "cotton king", and ably assisted by prominent local coffee firms, became extremely active on the buying side; and by February, 1904, they had forced the price up to eleven and eighty-five hundredths cents. This figure, the highest since 1896, was reached on February 2, which proved to be another day of enormous speculative dealings, involving roundly 462,000 bags. This marked another turning point; the three succeeding days of record-breaking operations on the Exchange witnessing a break of roughly two cents. Mr. Sully went on a vacation on February 3, and the Sielcken interests sold on a large scale. Business for that day was placed at 555,000 bags, closing prices being about one-half cent lower. This brought on enormous liquidation by western bulls on the following day, approximately 500,000 bags. As a result, prices lost twenty-five to sixty-five points on a turn-over of about 642,000 bags. All records for business were smashed on the following day, February 5. The official record was 689,000 bags, but trade estimates made it more than 1,000,000 bags. On that day, southern interests liquidated heavily, causing net losses of eighty to ninety points. Doubtless the break would have been more severe had it not been for buying by the Sielcken people and several other strong interests at and below seven and one-quarter cents for September contracts.

The Story of Valorization

The valorization, or equalization, of coffee originated in Brazil. When the original plan was threatened with disaster, Hermann Sielcken stepped in and saved the Brazil planters from ruin; the Brazil government from possible revolution; and, incidentally, won for himself and those who were his partners in the enterprise much unenviable notoriety.

The principle of valorization is generally conceded to be economically unsound, because it encourages overproduction. And valorization in Brazil would have been a failure, had it not been for a fortuitous combination of short crops, Hermann Sielcken's genius, and the World War. Because of the lessons learned in this experience, Brazil's subsequent valorization enterprises have run more smoothly.

A rapidly increasing world demand, a wonderfully fertile soil, and cheap labor kept the Brazil coffee industry in a flourishing condition nearly to the close of 1889. Coffee consumption was increasing, especially in the United States. By April 1890, the average import price per pound of Rio No. 7 in this country was nineteen cents; and Brazil was supplying only about half our needs. Virgin soil was still available in Brazil, and immigration furnished all the needful labor. Easy profits led to increased investment and careless methods. Her planters were drunk with prosperity. For six years, nearly all the three million inhabitants of São Paulo, Brazil's largest coffee producing state, "entirely gave up planting corn, rice, beans, everything they

needed. They bought them because coffee was so immensely profitable that they put all their labor in coffee."

Brazil had been going through a period of low exchange. Paper money fell below par. The exaggerated issues of it, which provoked the collapse of exchange, suddenly endowed Brazil with an abundant circulation of money. Production was enormously stimulated. New undertakings sprang up on every hand. Armies of agricultural laborers were recruited in Europe and shipped into the coffee districts. And then, to make the story short, supply passed demand, surplus stocks began to appear, prices began to fall, and fell until they dropped below the cost of production.

It was in 1896 - 97, when the new trees came into bearing by the tens and hundreds of thousands, that São Paulo's folly began to tell. By October of that year the price of Rio No. 7 in New York had fallen to about seven cents. The decline continued, until, in 1903, it hung around five cents. Then began the winter of São Paulo's discontent. Too late, the state government tried by taxing new coffee estates, to force the planters to raise crops to supply their own necessities. The times grew harder.

Mortgages held by large coffee houses and bankers were being foreclosed. The industry was passing into European hands. The smaller planters were becoming desperate; and desperation is only a step from revolution. The government of the state of São Paulo knew this; and to save the state, it finally promised it would buy the next coffee crop, and would hold it for the planters at such a price as would be necessary to continue the industry. The protagonists of this plan to valorize coffee were Dr. Jorge Tibiriçá, Dr. Augusto Ramos, and Dr. Albuquerque Lins.

During all the period covering São Paulo's rise and fall in coffee, the financial genius who was to lead her again into the land of plenty had been quietly acquiring a knowledge of her problems — also, the ability to make money out of their solution.

Valorization was undertaken to save the coffee industry. Its intent was good, even if the theory was bad. The scheme was not new, and there were no encouraging precedents to augur its success. The situation was desperate and seemed to justify the trial of a desperate remedy. São Paulo attempted to carry the load; but her resources were insufficient.

The bumper world crop of 19,090,000 bags in 1901 - 02 was followed, in 1906 - 07, with another extraordinary yield of 24,307,000 bags, of which Brazil alone produced 20,192,000 bags. To make good its promise to the planters, ready cash was needed; and so the São Paulo government sent a special commissioner to Europe to get it. For sixty years the Rothschilds had acted as Brazil's bankers. The commissioner went to the Rothschilds first. He was flatly refused. After that, he was turned down by practically every bank on the continent. It looked as if the bankers had entered into a gentlemen's agreement to make it unanimous. Then the commissioner bethought himself of the coffee merchants; and that thought naturally suggested Hermann Sielcken, who, singularly enough, happened to be conveniently resting at nearby Baden-Baden. In August, 1906, the commissioner waited upon Mr. Sielcken and begged his aid.

It was Sielcken's hour of triumph. For years he had been soliciting Brazil. Now the tables were turned, and Brazil was asking favors of Sielcken.

The rest of the story is best told by Robert Sloss, who wrote it for *World's Work* from information furnished by trade authorities — and even by Mr. Sielcken, himself, in various speeches, newspaper articles, and on the witness stand. It is presented here with certain minor corrections by the author:

"Well, what do you want me to do?" asked Hermann Sielcken of the commissioner from the state of São Paulo.

"We want you to finance for us five to eight million bags of coffee," said the commissioner blandly.

Here was an adventure. Here was a proposition to lift bodily out of the market half as much coffee as the world's total production had averaged for the ten preceding years when prices had been so low. Presumably, if this were done, prices would be doubled. But Hermann Sielcken shook his head.

"No," he said, "there is not the slightest chance for it, not the slightest." And then he pointed out that there would be "no financial assistance coming from anywhere" if the São Paulo planters kept on raising such ridiculously large crops of coffee.

The commissioner assured him that the prospect was for smaller crops in future. Hermann Sielcken was not so sure about it. "At a price low enough," he mused, "I might be able to raise funds to pay eighty percent on a value of seven cents a pound for Rio No. 5."

The commissioner was dismayed. His government had already promised to take coffee from the planters at about a cent a pound above the market, and the market then stood at nearly eight cents. The government would have to dig to make up the difference. Hermann Sielcken's terms were the best that could be got, however, and the commissioner accepted them.

From that time forth Hermann Sielcken was the head of the movement. He approached a few large coffee merchants, including his former rivals, Arbuckle Brothers, and drew up a contract. The merchants agreed to advance eighty percent of the sum required to buy two million bags of coffee at seven cents a pound. If the market went above seven cents, the government was to make no purchases. If it fell below seven cents, the government was to make good the difference to the merchants by cable.

Before the season was well advanced the unexpected happened. Brazil was reaping the largest coffee harvest in the history of the world. The two million bags of coffee purchased by the government were as a drop in a bucket. Financed by Hermann Sielcken, Schroeder, the great London banker, and a few prominent European merchants, the government was forced to buy almost nine million bags. Toward the end of 1907, the government had lifted half of the world's visible supply of coffee, but the market stood only a trifle above six cents a pound. The government was practically bankrupt.

Hermann Sielcken now enlisted the Rothschilds on his side, and shifted the financial burden from the shoulders of the coffee merchants to those of the Paris bankers and their American associates. Then the Rothschilds imposed their conditions on the government of Brazil. A national law was passed determining a heavy penalty for any one who planted a new coffee tree in Brazil. The government guaranteed that not more than nine million bags of the next coffee crop and not more than ten million bags of any succeeding crop should be exported.

By the end of 1911, the coffee market stood well above thirteen cents. Here was a rise of more than one hundred percent in two years, more than sixty percent in six months. Evidently, valorization coffee in the hands of the bankers' committee had become a gilt-edged security. But how?

During the five crop years since the "plan" was launched on the heights above Baden, nearly 90,000,000 bags of coffee had been raised in the world. The bankers' committee still held 5,108,000 bags of this. At the highest estimate, consumption had exceeded production by only 4,000,000 bags. Here was a shortage of only a little more than ten percent in supply as against demand, so far as crops go. Yet there had been a rise of more than one hundred percent in two years in the price of coffee on the New York Coffee Exchange. . . . Upon the merchant's ability to deliver coffee on the New York Coffee Exchange depends the price of coffee in the world. That explains why the bankers' committee from the beginning refused absolutely to sell valorization coffee on the public exchanges of the world. In Europe, they put it up at auction; and when it didn't go, it was bought in for them. In America, they announced in a printed circular that valorization coffee would be sold only on condition that the purchaser would not deliver it on the New York Coffee Exchange.

Hermann Sielcken absolutely refused to sell coffee to the merchants on the Exchange. Arbuckle Brothers kept on buying coffee heavily, as if they would corner the market. They resold the coffee, however, at private sales, exacting a written contract from the buyer that he would not deliver the coffee on the New York Coffee Exchange, or resell it to any one that would so deliver it. The Coffee Exchange began an investigation, but nothing ever came of it.

Shortly after the valorization committee had apparently cleared up $25,000,000 in one year, the restriction as to the delivery of valorization coffee on the New York Coffee Exchange was officially removed. Yet neither from Hermann Sielcken nor from Arbuckle Brothers, it is charged, could one buy any coffee to deliver for that purpose. In 1911, coffee rose to sixteen cents per pound.

At the end, it was found that the committee's holdings had been marketed at the various sales on a basis, for Santos 4s, from eight and five-eighths cents minimum, to the final sale here forced by the United States government, at which time the price realized was sixteen and three-quarter cents for Santos 4s, and fourteen cents for Rio 7s.

The one fly in the valorization ointment was Senator G. W. Norris, of Nebraska, who early in 1911 called for a congressional investigation of the operations of the valorization syndicate, which he said was costing the American people $35,000,000 a year. The attorney-general was instructed to report as to whether or not there was a coffee trust. It was a leisurely investigation, which encountered many snags placed in its way by those who believed it would be against international policy to question too closely the participation of the Brazil government in the enterprise. Politics played no inconsiderable part in the investigation, which dragged along until May 18, 1912, when an action was begun in the Federal District Court for the southern district of New York, alleging conspiracy in restraint of trade on the part of Hermann Sielcken; Bruno Schroeder, of J. Henry Schroeder & Co.; Edouard Bunge; the Vicomte des Touches; Dr. Paulo da Silva Prado; Theodor Wille; the Société Generale; and the New York Dock Co.; also praying for injunction and receivership of the valorization coffee then stored in the United States, and amounting to 746,539 bags. The injunction was denied.

Immediately thereafter, rumors began to circulate that the government's coffee

suit would never be tried. The Brazilian ambassador threatened diplomatic interference, and Attorney-General Wickersham let it be known that a friendly settlement might be effected. Sielcken boldly challenged the authorities to prosecute the case, and even seemed to invite criminal proceedings against himself. Saving the government's face, and Brazil's face, at one and the same time, proved to be a long and tedious process.

Meanwhile, Senator Norris introduced in Congress a bill designed to give the government power to seize importations of coffee when restraint of trade was proved. It was vigorously opposed by many prominent green-coffee men and roasters; but in February, 1913, it became enacted into a law. It effectively killed all future valorization schemes in so far as direct participation by this country is concerned.

About December 1, 1912, Attorney-General Wickersham accepted good-faith assurances from Mr. Sielcken's attorney — who represented also the Brazil government — and agreed that if the valorization coffee stored here was sold to bona-fide purchasers before April 1, 1913, the government's suit would be dismissed. In May, 1913, the attorney-general of the new Wilson administration, which came into office in March of that year, issued a statement saying that, good-faith assurances having been received from the Brazil government that the understanding was fulfilled in letter and spirit before the date set by the previous attorney-general, and the entire amount of coffee disposed of to eighty dealers in thirty-three cities, the suit would be dismissed.

In the United States Senate about the same time, Senator Norris renewed his attack on "the international coffee trust". He charged that the coffee sale was not as represented, but merely a transfer, and called upon the Department of Justice for the facts, with names of the alleged purchasers.

Attorney-General McReynolds, on May 7, 1913, declined to send to the Senate the official correspondence in regard to the Brazil coffee-valorization matter, because it was "incompatible with the public interests." He did, however, send other papers on the subject. The secretary of state sent copies of some correspondence; but the documents were not made public. This ended the matter, although Senator Norris called for a congressional investigation, charging that the attorney-general had been handed a "gold brick".

Sielcken contented himself with remarking that the suit was a mistake in the first place, and that it was a foregone conclusion the government would be defeated. Also, he offered $5,000 to any one who could explain the Norris bill.

Valorization, then, was started by the state of São Paulo in 1905, when a law was passed authorizing the state to enter into an agreement with the other Brazil states and the federal government for the adoption of measures which would assure the valorization of coffee and facilitate a propaganda abroad for increased consumption.

The states of São Paulo, Minas Geraes, and Rio de Janeiro proposed, early in 1906, to withdraw from the markets such quantities of coffee as would keep down exports and maintain profitable prices. The plan comprehended the interested states borrowing about $75,000,000 from European and United States bankers with which to buy up the surplus coffee. To take care of interest and amortization, a tax of three francs per bag of 132 pounds (about 57 cents) was to be levied on all coffee exports, collectable at Santos and Rio de Janeiro. Further coffee-planting was to be checked by enforcing the law which carried a tax sufficiently high to operate toward restriction.

When it was understood that Brazil's federal government would not endorse the plan *in toto*, it was abandoned by Rio de Janeiro and Minas Geraes. However, the state of São Paulo in the course of the next two years borrowed some $30,000,00 on its own account for valorization purposes, obtaining half the amount direct from foreign banking interests, and the remainder, through the Brazilian federal government, from London sources.

This first valorization was abandoned in favor of the Sielcken plan, which the federal government ratified in July, 1908. By this new plan São Paulo borrowed $75,000,000 from the syndicate composed of American, English, German, French, and Belgian bankers. Out of this it repaid the $30,000,000 loan. The 1908 loan was to expire in ten years, in 1919. Under the plan of the new loan, it was agreed that certain amounts of the valorized coffee should be stored as collateral in warehouses in New

York and Europe in charge of a committee of seven, who were authorized to sell the coffee in the market in specified quantities and at prices that would not disturb the price of other coffees. The composition of the committee was as follows: Dr. Francisco Ferreira Ramos, of São Paulo and Antwerp; who was succeeded by Dr. Paulo da Silva Prado; the Vicomte des Touches, of Havre; the Société Generale, of Paris; the firm of Theodor Wille, of Hamburg; Hermann Sielcken, of New York; Edouard Bunge, of Antwerp; and Baron Bruno Schroeder, of J. Henry Schroeder & Co., of London.

Brazil agreed to purchase 10,000,000 bags and to hold them off the market until conditions warranted their sale. It was also agreed that the total exports of unvalorized stocks from Brazil would be restricted to 10,000,000 bags for 1907 - 08, and to 10,500,000 bags for 1909 - 10. In addition, a surtax of five francs gold per bag (96¼ cents) was placed on every bag exported to pay carrying charges. The management of the government's holdings was placed in the hands of the international committee. This committee issued bonds which were quickly subscribed for; and because of its efficient handling of its huge holdings, prices held steady in spite of the record-breaking Brazilian crop of nearly 20,192,000 bags in 1906 - 07, and a later one in 1909 - 10 of about 15,000,000 bags. Indeed, there was an advance of about ten dollars a bag between 1904 and 1911.

Valorization had the effect of stabilizing the Brazil market, and giving the planters and allied interests the assistance they needed to ward off the disaster that threatened them through overproduction. The United States government action in 1912 forced the sale of the valorized stocks held in this country, and the Congress passed the law making it impossible again to offer for sale in America stocks of coffee held under similar valorization agreements.

The coffee situation became so serious in 1913, that São Paulo again entered the money market for another loan, borrowing $37,500,000 through the good offices of the Brazilian federal government, following this up two years later with another loan of $21,000,000. According to a semi-official statement issued in Brazil early in 1919, the status of valorization at that time was that the first loan of $75,000,000 of 1908, had been entirely liquidated, and the two later loans were greatly reduced. At the same time, it was announced by the president of the state of São Paulo that the surtax of five frances would be withdrawn as soon as the liquidation of the loans had been completed. This surtax, however, is still in effect. In 1919, the São Paulo government proposed advancing the *pauta,* or export duty, very materially. A strong protest was made by all the exporters; and a compromise was at last effected by which the proposed increase in the *pauta* was canceled, and the existing surtax of five francs per bag continued as an offset.

The valorization project just described was the second of its kind, a former attempt having proved a failure. At that time (1870), the Brazilian government had been a large purchaser of Rio coffee, buying it in lieu of exchange, as it had large remittances to make. The coffee was sold through G. Amsinck & Co., and it is believed that heavy losses were sustained.

Since the Sielcken valorization enterprise, the Brazilian government has promoted two more valorizations, one in 1918, another early in 1922.

War-Time Government Control of Coffee

The board of managers of the New York Coffee and Sugar Exchange, Inc., had realized, late in 1917, that war-time government control of coffee trading was likely in view of the government's activities in other commodities. To guard against the danger of a sudden announcement of such action, the president of the Exchange was empowered from month to month, at each meeting of the board, to suspend trading at any time that conditions warranted; so that, when President Wilson announced, on January 31, 1918, that all dealers in green coffees were to be licensed, the Exchange was fully prepared. Trading was suspended pending further information, and owing to the farsightedness of the board of managers, all danger of a panic in the market was averted.

By 1917, the allies had stopped shipments of coffee to Germany through neighbors who had been her sole source of supply. Stocks in all the producing countries were accumulating, and São Paulo had embarked on another valorization scheme to protect her planters. The markets of Europe were

entirely controlled by the governments; and the United States was practically the only free and open market. The market here was steady and without particular animation, and showed none until the end of November, 1917. At that time, speculation activities, steamer scarcity, and the steady advance in freights, became decided influences in the market; and prices began to advance.

Freights on shipments from Brazil had advanced from one dollar and twenty cents per bag early in the year to unheard-of prices; and, before the bubble burst, had reached as high as four dollars per bag. With this steadily advancing freight, speculation in coffee became more active; and prices naturally began to rise. The relative cheapness of coffee compared with all other commodities; the fact that coffee here had shown very little advance; the prospect of an early peace; the large European demand to follow; were favorite bull arguments. The market became excited; speculative buying was general, every one,. apparently, wanted to buy coffee; and twenty cents per pound for Santos 4s in the near future was a common prediction.

The United States food administrator had shown his antipathy to uncontrolled exchange operations by his action on sugar, wheat, corn, and other commodities, dealt in on the exchanges; consequently, the proclamation of President Wilson regarding coffee was not a surprise to those who had been watching the situation closely, especially as on January 30, 1918 (the day before the proclamation) the president of the Coffee Exchange was summoned by telegraph to appear in Washington to discuss ways for a proper control of the article, and the best means to bring about such control. As a result of this summons, a committee of the entire trade, representing the Exchange, the green-coffee dealers and importers, the roasters, and the brokers, was appointed by the Exchange to confer with the food administrator at once, in order to work out a plan whereby the business could be kept going. After a long conference, rules agreed upon were approved that became the basis on which business was conducted until the withdrawal of all regulations regarding coffee in January, 1919. Much trade criticism followed the publication of some of these rules.

George W. Lawrence, president of the New York Coffee and Sugar Exchange, was called to Washington on February 28, 1918, to take charge of a newly created coffee division under Theodore F. Whitmarsh, chief of the distribution division of the food administration. In this position he rendered a signal service to the trade and to his country. Although subjected to a cross-fire of criticism from many green and roasted coffee interests, he never wavered in the performance of his full duty; and his good judgment, tact, and loyalty to American ideals, won for him a high place in the regard of all those who had the best interests of the country at heart. He was ably assisted in his work by Walter F. Blake, of Williams, Russell & Company, New York; and by F. T. Nutt, Jr., treasurer of the New York Coffee and Sugar Exchange.

A coffee advisory board was appointed in June 1918, to serve as a go-between for the trade and the food administration. Those who served on this committee were: Henry Schaefer, of S. Gruner & Co., New York, chairman; Carl H. Stoffregen, of Steinwender, Stoffregen & Co., New York, secretary; and William Bayne, Jr., of William Bayne & Co., New York; S. H. Dorr, of Arnold, Dorr & Co., New York; A. Schierenberg, of Corn, Schwarz & Co., New York; Leon Israel, of Leon Israel & Bro., New York; Joseph Purcell, of Hard & Rand, New York; B. F. Peabody, of T. Barbour Brown & Co., New York; J. D. Pickslay, of Williams, Russell & Co., New York; Charles L. Meehan, of P. C. Meehan & Co., New York; B. C. Casanas, of Merchants Coffee Co., New Orleans; John R. Moir, of Chase & Sanborn, Boston; and B. Meyer, of Stewart, Carnal & Co., New Orleans.

Others in the trade who served the food administration during the period of the World War were George E. Lichty, president of the Black Hawk Coffee & Spice Co., Waterloo, Iowa; and Theodore F. Whitmarsh, vice-president and treasurer of Francis H. Leggett & Co., New York.

The visible supply of coffee for the United States on January 1, 1918, was 2,887,308 bags. The world's visible supply was given as 10,012,000 bags; but to be added to this were more than 3,000,000 bags held by the São Paulo government. Thus there was little reason to fear a coffee

shortage. That coffee should be permitted, with this large amount in view, to run wild as to price, was certainly not the intention of the food administrator, whose purpose was to keep foods moving to the United States forces and allies, and as far as possible, to keep reasonable prices for the United States consumers. Steadily advancing prices of foods meant increasing cost of labor, general unrest, and a difficult situation to meet at a period when the situation as a whole was most critical.

Trouble for the coffee trade was imminent early in 1918, when the shipping board, backed by experts, decided, or attempted to decide, that coffee was not a food product; that no vessels could be had for its transportation; and that it must be put on the list of prohibited or restricted commodities. Mr. Hoover, however, insisted that coffee was a very necessary essential, and that tonnage must be provided for an amount sufficient at all times to keep the visible supply for the United States up to at least 1,500,000 bags of Brazil coffee; and this figure was ultimately accepted and carried out by the shipping board.

These figures, based on the deliveries of the two preceding years, and with dealers limited to ninety days stock in the country, were deemed ample to care for all requirements. It was figured that by November 1, 1918, the freight situation would be relieved to such an extent by the new vessels building, that the amount could be increased should it be found necessary. The food administration, through the war trade board, offered steamer room to importers of record of the years 1916 - 17 at $1.70 per bag. The first few vessels were promptly filled on a basis of nine and one-quarter to nine and five-eighths cents, c. & f., for Santos 4s, well described. About the same time, our army and navy were able to buy at eight to eight and three-eighths cents f. o. b. Santos, for shipment by their own vessels. After the first few vessels offered by the War Trade Board were filled, the trade became indifferent. The warehouses in Brazil were loaded with stocks; vessels to carry coffee were assured buyers at a fixed rate (profits limited); and, as there was no apparent reason for an advance, buyers were willing to let the producing countries carry the stock.

The last week in June brought very cold weather in São Paulo, and cables reported heavy frost. The news was not taken seriously by the trade at large. "Frost news" from Brazil was no novelty, and in the past had always been looked upon as a regular and seasonable method of bulling the market. This year, however, the frost was a fact, and the market began to move upward with surprising speed. Reports of the damage to the trees varied from forty to eighty per cent. Quotations from Santos advanced two cents per pound in as many days. United States buyers were not disposed to follow the advance; offerings of steamer room were declined; and boats booked for coffee, owing to the lack of cargoes, were transferred elsewhere. Meanwhile the market continued to advance rapidly. The allies were holding the enemy, and peace prospects were brighter. From September 1 to November 15, the records of the food administration showed very small purchases. The buyers did not believe in the frost. With the news of the armistice, Brazil markets went wild; and Santos 4s, which had sold at eight and one-quarter cents in May, were quoted at twenty and one-half cents by December 10.

The food administration had decided, on February 6, 1918, after consulting the committee appointed by the Exchange, and on their advice and recommendation, to permit trading in futures on the following plan: a fixed maximum price of eight and one-half cents per pound for the spot month, with a carrying charge not to exceed fifteen points per pound for delivery for each succeeding month. Thus the price for March delivery was fixed at eight and one-half cents, while July delivery could be sold at nine and one-tenths cents; but when July arrived, it became the spot month, and eight and one-half cents was the maximum at which it could be sold.

This rule effectively stopped speculation, but failed to work out satisfactorily to the trade. Experience proved that a maximum fixed price at which coffee could be traded in would have produced much better results. Business on the Exchange followed its usual course, and the customary hedging of purchases was done by dealers. The indifference of buyers, already referred to, had resulted in a heavy decrease of the United States visible supply; and it had shrunk to 2,445,000 bags on September 1; to 2,173,098 bags on October 1; to 1,857,260 bags on November 1. Included in these

amounts were at least 500,000 bags, held in New York by foreign owners, which could not be sold; and of the balance left, there was undoubtedly a liberal amount sold against on the Exchange for future delivery. By October, the situation had become acute. Dealers who had classified themselves as jobbers or importers had gone into the retail classification in order to evade the limitations of profit allowed jobbers, and were limiting their sales to lots of twenty-five bags or fewer. Dealers who had legitimately hedged their holdings were unable to buy in.

The Exchange officials showed no disposition to relieve the situation; and as all prices had reached the maximum price for every month permitted, the food administration, on November 1, 1918, ordered the liquidation of all contracts outstanding, bought or sold, by not later than November 9. This was done; and the coffee covered by such contracts was released to the trade.

The regulations governing transactions on the Exchange were withdrawn on December 5, 1918; and, after a long argument, the Exchange decided to reopen for trading on December 26, 1918. Opening transactions amounted to 25,000 bags on a basis of seventeen and one-half cents per pound or nine cents over the prices at which contracts had been liquidated. On December 28 the price had declined to fifteen and one-half cents. In the opinion of many of our best merchants, the Exchange should have been closed during the war, as it failed to be of any real service. That it was operating at a fixed price for the spot month only, made it of no value to the trade during this period. Of its loyalty to the government, and its evident desire to assist there can be no question; but its cheerful acceptance of the burdens laid upon it proved largely futile.

The action of the food administration in confining the coffee business solely to licensed dealers and to a fixed profit on actual cost; in limiting dealers to ninety days stock; and in prohibiting resales, was the cause of much unjust criticism. The regulations were based on the general rules of the food administration, and applied to coffee quite as equitably as did the regulations governing other food commodities under control and license. As a matter of fact, they were much less rigorous in some ways than the regulations applying to many other articles. For example, ninety days stock based on sales for 1916-17 was allowed on coffee. There was no other article on the food list to which this liberality was permitted. A forty to sixty days stock would probably be found to be the maximum permitted to be carried of other food products.

The general proclamation of the food administration of November 1, 1917, declared:

> These general and special rules and regulations are promulgated by the President to accomplish three principal objects, viz: 1st. to limit the prices charged by every licensee "to a reasonable amount over expenses and forbid the acquisition of speculative profits from a rising market"; 2d, to keep all food commodities moving in as direct a line as possible and with as little delay as practicable to the consumer; 3d, to limit as far as practicable contracts for future delivery and dealing in future contracts.

From the foregoing it will be apparent that a profit to be allowed based on "market value" for coffees was an impossibility, unless this law had been altered to allow all licensees of other commodities to share. Coffee profits were fixed by the food administration on the advice of, and with acceptance by, the coffee committee. They started too low; and were made more liberal, when the first figures were shown to be impossible. George W. Lawrence reports a conversation that he had with the food administrator on this particular subject, and that was characteristic of his broadness. Mr. Hoover said, "The coffee dealers are complaining of the profits permitted them. I want them satisfied; and if the profits are not reasonable, I shall put them where they will be. This war is not going to last always; and at its conclusion I want every American merchant in a position to be able to continue his business and be no worse off than when the war started."

Resales were prohibited, or limited to one transaction, in order to prevent an accumulation of profits, that, added to each transfer, would result ultimately in higher prices to the consumer.

The fixing of profit based on cost, and not on market or replacement value, is a thing that is impossible in normal times. Carried to the last degree, it would mean ruination; for no provision is made for declines in the market, and resulting losses. As a war measure it was inevitable, and so endured. In normal times it is like trying

to make water run uphill. With a united people, it worked; but one can not have a World War always to unite the people. It has been said that government regulation of coffees caused a large increase in price to the consumer. This would be hard to prove. The trade, generally, that refused to buy at ten to twelve cents per pound because it did not, or would not believe the reports of frost damage, and thought prices too high, was frantically bidding up to twenty and twenty-two cents for 4s in March and April, 1919. According to the ideas of some enthusiasts, fifty cents was not an impossibility. Naturally such a bubble must burst eventually. Government control had nothing to do with such natural conditions as frost, or as the buyers' indifference. Expansion and inflation were in the air, and had to run their course. The year 1920 brought the aftermath; and in the deflation, coffee, with all other commodities, went down to prices far below its intrinsic value. The expected European demand did not materialize; the interior buyer was overloaded with stock; and the losses of the coffee trade in 1920 will, it is to be hoped, never be repeated.

The Story of Soluble Coffee

For nearly two decades, many coffee men and chemists have been seeking a soluble coffee, or dried coffee extract, that would simplify the preparation of the beverage. Thus far, all the products that have appeared on the market are somewhat deficient in aroma and in the more delicate flavors of coffee. A satisfying average cup of coffee can be prepared from the better brands; the chief advantages of which are rapidity of preparation, absence of any grounds, and uniformity of drink.

Considerable progress has been made in certain directions; enough to warrant telling here, though briefly, the story of soluble coffee to date.

Some there are among trade experts and coffee connoisseurs who maintain soluble coffee is an *ignis fatuus;* that it can never be manufactured without destroying the aromatic principle; that at best it is a delusion and a snare. Certainly, many absurd claims have been made for some of the soluble coffees on the market. However, there are others that are not without their merits; and the story of their introduction to the trade and the consuming public is entertaining and instructive.

Dr. Sartori Kato, a Japanese chemist, of Tokio, brought a soluble tea to Chicago about 1899. It was not a commercial success; but it served to bring him in touch with some coffee men and chemists, for whom he produced a soluble coffee in the same year. A company was organized to promote the product. It was called the Kato Coffee Co., and included, in addition to Dr. Kato; Fillip Kreissel, a chemist; W. R. Ruffner, a green-coffee broker; and I. D. Richheimer, a coffee roaster. Kato's soluble coffee was first sold to the public at the Pan-American Exposition in 1901. The first quantity order was received from Captain Baldwin and by him used with satisfaction on the Ziegler Arctic expedition. United States patents on a coffee concentrate, and process for making the same (soluble coffee), were granted to Sartori Kato of Chicago, assignor to the Kato Coffee Co., of the same place, on August 11, 1903.

G. Washington, who was born in Belgium of English parents, and who was living temporarily in Guatemala City, invented about 1906, a soluble coffee that was made ready for the market in 1909.

The George Washington Coffee Refining Co. was organized in 1910 to put the Washington product on the market, which it did first under the name, Red E coffee. This was later changed to G. Washington's Prepared Coffee, as an alternative to Washington's Coffee Extract, a name which was favorably regarded by all except certain authorities at the national capital. Associated with Mr. Washington at the start of the enterprise were: E. Van Etten, former vice-president of the New York Central Railroad; W. J. Arkell; Bartlett Arkell, of the Beechnut Packing Co.; C. M. Warner, of the Warner Sugar Refining Co.; and Charles E. Proctor, of the Singer Sewing Machine Co.

The G. Washington Coffee Refining Company has its coffee-roasting and preparing plant in Brooklyn; but its process is a secret one, and has never been patented.

F. Lehnhoff Wyld, who was the Washingtons' family physician when they lived in Guatemala City, and with whom Mr. Washington had discussed his work in soluble coffee, duplicated the Washington product in 1913; and, with E. T. Cabarrus,

he organized the *Société du Café Soluble Belna,* Brussels, Belgium, to put on the European market a refined soluble coffee under the brand name Belna.

Eight or ten United States patents have been granted on soluble coffees that have never been applied commercially.

Nowhere has soluble coffee met with such success as in the United States, where a number of brands followed the Kato and G. Washington products. Among them, mention should be made of the C. F. Blanke Tea & Coffee Company's Magic Cup, afterward Fairy Cup, and later, Faust brand, brought out in 1912; the Baker Importing Co.'s Barrington Hall Soluble Coffee, brought out in 1917; and the Charles G. Hires Co.'s brand, introduced to the trade in 1918.

It was the World War that brought soluble coffee to the front. E. F. Holbrook, formerly in charge of the coffee section, subsistence division, United States War Department, said, "The use of mustard gas by the Germans made it one of the most important articles of subsistence used by the army." Early in the war, soluble coffee was added to the reserve ration, three-quarters of an ounce being considered at first the proper amount per ration. After trying to put it up in sticks, tablets, capsules, and other forms, it was determined that the best method was to pack it in envelopes. A month before the signing of the armistice, the New York depot was notified that after January 1, 1919, the requirements of soluble coffee were to be 25,000 pounds per day in addition to quantities packed in reserve rations, bringing the total daily output to 42,500 pounds per day. Arrangements were made to have the total output of the New York zone, 40,000 pounds per day, packed in quarter-ounce envelopes, twenty-four to a sealed can.

I. D. Richheimer, promoter of the original soluble coffee of Kato and the Kato patent, organized the Soluble Coffee Co. of America in 1918, to supply soluble coffee to the American army overseas. After the armistice, the company began licensing other merchants under the Kato patent or offering to process the merchants' own coffee for them if desired.

William A. Hamor and Charles W. Trigg, Pittsburgh, assignors to John E. King, Detroit, were granted a United States patent in 1919 on a process for making a new soluble coffee. Their process consists in bringing the volatilized caffeol in contact with a petrolatum, or absorbing medium, where it is held until needed for combination with the evaporated coffee extract. The King Coffee Products Corp. of Detroit was organized in 1920 to manufacture this product, known as Minute coffee, and a coffee base for soft drinks, the latter being marketed under the name of Coffee Pep. Mr. King had believed for many years that soluble coffee was destined to solve many of the vexations of the coffee business, and had been experimenting with the idea since 1906. To facilitate his investigations, he established a fellowship at the Mellon Institute of Industrial Research, Pittsburgh, in 1914, in charge of Charles W. Trigg. This chemically controlled research evolved a product which, after passing through the laboratory stage, was placed upon a small unit plan basis, and then patented. Five additional patents on the product were granted Messrs. Trigg and David S. Pratt in 1921; and all were assigned to John E. King.

THE EARLIEST COFFEE MANUSCRIPT, 1587

Pages from the Arabian writing by Abd-al-Kadir, photographed for this work in the Bibliothèque Nationale, Paris.

CHAPTER XXXII

A HISTORY OF COFFEE IN LITERATURE

The romance of coffee, and its influence on the discourse, poetry, history, drama, philosophic writing, and fiction of the seventeenth and eighteenth centuries and on the writers of today — Coffee quips and anecdotes

ANY study of the literature of coffee comprehends a survey of selections from the best thought of civilized nations, from the time of Rhazes (850-922) to Francis Saltus Saltus. We have seen in chapter III how Rhazes, the physician-philosopher, appears to have been the first writer to mention coffee; and was followed by other great physicians, like Bengiazlah, a contemporary, and Avicenna (980-1037).

Then arose many legends about coffee, that served as inspiration for Arabian, French, Italian, and English poets.

Sheik Gemaleddin, mufti of Mocha, is said to have discovered the virtues of coffee about 1454, and to have promoted the use of the drink in Arabia. Knowledge of the new beverage was given to Europeans by the botanists Rauwolf and Alpini toward the close of the sixteenth century.

The first authentic account of the origin of coffee was written by Abd-al-Kadir in 1587. It is the famous Arabian manuscript commending the use of coffee, preserved in the Bibliothèque Nationale, Paris, and catalogued as "Arabe, 4590."

Its title written in Arabic is as follows:

4	3	2	1
القهوة	حل في	الصفوة	عمدة

which is pronounced (reading right to left):

1	2	3	4
omdat	as safwa	fi hall	al kahwa

or, in the literary style:

omdatu s safwati fi hallu 'l kahwati

which means — literally, (the corresponding words being underlined and numbered)

"The maintenance (1) of purity (2) as regards the legitimacy (3) of coffee (4)."

or, more freely, "Argument in favor of the legitimate use of coffee."

قهوة kahwa, is the Arabic word for coffee.

The author is Abd-al-Kâdir ibn Mohammad al Ansâri al Jazari al Hanbali. That is, he was named Abd-al-Kadir, son of Mohammed.

Abd-al-Kadir means "slave of the strong one" (i. e., of God); while *al Ansari* means that he was a descendant of the *Ansari* i. e., "helpers"), the people of Medina who received and protected the Prophet Mohammed after his flight from Mecca; *al Jazari* means that he was a man of Mesopotamia; and *al Hanbali* that in law and theology he belonged to the well known sect, or school, of the Hanbalites, so called after the great jurist and writer, Ahmad ibn Hanbal, who died at Bagdad A. H. 241 (A. D. 855). The Hanbalites are one of the four great sects of the Sunni Mohammedans.

Abd-al-Kadir ibn Mohammed lived in the tenth century of the Hegira — the sixteenth of our era — and wrote his book in 996 A. H., or 1587 A. D. Coffee had then been in common use since about 1450 A. D. in Arabia. It was not in use in the time of

the Prophet, who died in 632 A. D.; but he had forbidden the drink of strong liquors which affect the brain, and hence it was argued that coffee, as a stimulant, was unlawful. Even today, the community of the Wahabis, very powerful in Arabia a hundred years ago, and still dominant in part of it, do not permit the use of coffee.

Abd-al-Kadir's book is thought to have been based on an earlier writing by Shihâb-ad-Din Ahmad ibn Abd-al-Ghafâr al Maliki, as he refers to the latter on the third page of his manuscript; but if so, this previous work does not appear to have been preserved. La Roque says Shihâb-ad-Din was an Arabian historian who supplied the main part of Abd-al-Kadir's story. La Roque refers also to a Turkish historian.

Research by the author has failed to disclose anything about Shihâb-al-Din save his name (*al Maliki* means that he belonged to the Malikites, another of the four great Sunni sects), and that he wrote about a hundred years before Abd-al-Kadir. No copy of his writings is known to exist.

The illustrations show the title page of Abd-al-Kadir's manuscript, the first page, the third page, and the fly leaf of the cover, the latter containing an inscription in Latin made at the time the manuscript was first received or classified. It reads:

Omdat al safouat fi hall al cahuat.
De usu legitimo et licito potionis quae vulgo Café nuncupatur. Authore Abdalcader Ben Mohammed al Ansari. Constat hic liber capitibus septem, et ab authore editus est anno hegirae 996 quo anno centum et viginti anni effluxerant ex quo huius potionis usus in Arabia felice invaluerat.

The translation of the Latin is:

Concerning the legitimate and lawful use of the drink commonly known as café, by Abdalcader Ben Mohammed al Ansari. The book is composed in seven chapters and was brought out by the author in the year of the Hegira 996 at which time a hundred and twenty years had passed since the use of this drink had become firmly established in Arabia Felix.

Coffee in Poetry

The Abd-al-Kadir work immortalized coffee. It is in seven chapters. The first treats of the etymology and significance of the word cahouah (kahwa), the nature and properties of the bean, where the drink was first used, and describes its virtues. The other chapters have to do largely with the church dispute in Mecca in 1511, answer the religious objectors to coffee, and conclude with a collection of Arabic verses composed during the Mecca controversy by the best poets of the time.

De Nointel, ambassador from the court of Louis XIV to the Ottoman Porte, brought back with him to Paris from Constantinople the Abd-al-Kadir manuscript, and another by Bichivili, one of the three general treasurers of the Ottoman Empire. The latter work is of a later date than the Abd-al-Kadir manuscript, and is concerned chiefly with the history of the introduction of coffee into Egypt, Syria, Damascus, Aleppo, and Constantinople.

The following are two of the earliest Arabic poems in praise of coffee. They are about the period of the first coffee persecution in Mecca (1511), and are typical of the best thought of the day:

IN PRAISE OF COFFEE

Translation from the Arabic

O Coffee! Thou dost dispel all cares, thou art the object of desire to the scholar.
This is the beverage of the friends of God; it gives health to those in its service who strive after wisdom.
Prepared from the simple shell of the berry, it has the odor of musk and the color of ink.
The intelligent man who empties these cups of foaming coffee, he alone knows truth.
May God deprive of this drink the foolish man who condemns it with incurable obstinacy.
Coffee is our gold. Wherever it is served, one enjoys the society of the noblest and most generous men.
O drink! As harmless as pure milk, which differs from it only in its blackness.

Here is another, rhymed version of the same poem:

IN PRAISE OF COFFEE

Translation from the Arabic

O coffee! Loved and fragrant drink, thou drivest care away,
The object thou of that man's wish who studies night and day.
Thou soothest him, thou giv'st him health, and God doth favor those
Who walk straight on in wisdom's way, nor seek their own repose.
Fragrant as musk thy berry is, yet black as ink in sooth!
And he who sips thy fragrant cup can only know the truth.
Insensate they who, tasting not, yet vilify its use;
For when they thirst and seek its help, God will the gift refuse.
Oh, coffee is our wealth! for see, where'er on earth it grows,
Men live whose aims are noble, true virtues who disclose.

COFFEE COMPANIONSHIP

Translation from the Arabic

Come and enjoy the company of coffee in the places of its habitation; for the Divine Goodness envelops those who partake of its feast.

There the elegance of the rugs, the sweetness of life, the society of the guests, all give a picture of the abode of the blest.

It is a wine which no sorrow could resist when the cup-bearer presents thee with the cup which contains it.

It is not long since Aden saw thy birth. If thou doubtest this, see the freshness of youth shining on the faces of thy children.

Grief is not found within its habitations. Trouble yields humbly to its power.

It is the beverage of the children of God, it is the source of health.

It is the stream in which we wash away our sorrows. It is the fire which consumes our griefs.

Whoever has once known the chafing-dish which prepares this beverage, will feel only aversion for wine and liquor from casks.

Delicious beverage, its color is the seal of its purity.

Reason pronounces favorably on the lawfulness of it.

Drink of it confidently, and give not ear to the speech of the foolish, who condemn it without reason.

During the period of the second religious persecution of coffee in the latter part of the sixteenth century, other Arabian poets sang the praises of coffee. The learned Fakr-Eddin-Aboubeckr ben Abid Iesi wrote a book entitled *The Triumph of Coffee,* and the poet-sheikh Sherif-Eddin-Omar-ben-Faredh sang of it in harmonious verse, wherein, discoursing of his mistress, he could find no more flattering comparison than coffee. He exclaims, "She has made me drink, in long draughts, the fever, or, rather, the coffee of love!"

The numerous contributions by early travelers to the literature of coffee have been mentioned in chronological order in the history chapters. After Rauwolf and Alpini, there were Sir Antony Sherley, Parry, Biddulph, Captain John Smith, Sir George Sandys, Sir Thomas Herbert, and Sir Henry Blount in England; Tavernier, Thévenot, Bernier, P. de la Roque, and Galland in France; Della Valle in Italy; Olearius and Niebhur in Germany; Nieuhoff in Holland, and others.

Francis Bacon wrote about coffee in his *Hist. Vitae et Mortis* and *Sylva Sylvarum,* 1623 - 27. Burton referred to it in his *"Anatomy of Melancholy"* in 1632. Parkinson described it in his *Theatrum Botanicum* in 1640. In 1652, Pasqua Rosée published his famous handbill in London, a literary effort as well as a splendid first advertisement.

Faustus Nairon (Banesius) produced in Rome, in 1671, the first printed treatise devoted solely to coffee. The same year Dufour brought out the first treatise in French. This he followed in 1684 with his work, *The manner of making coffee, tea, and chocolate.* John Ray extolled the virtues of coffee in his *Universal Botany of Plants,* published in London in 1686. Galland translated the Abd-al-Kadir manuscript into French in 1699, and Jean La Roque published his *Voyage de l'Arabie Heureuse* in Paris in 1715. Excerpts from nearly all these works appear in various chapters of this work.

Leonardus Ferdinandus Meisner published a Latin treatise on coffee, tea, and chocolate in 1721. Dr. James Douglas published in London (1727) his *Arbor yemensis fructum cofe ferens, or a description and history of the Coffee Tree.* This work laid under contribution many of the Italian, German, French, and English scholars mentioned above; and the author mentioned as other sources of information: Dr. Quincy, Pechey, Gaudron, de Fontenelle, Professor Boerhaave, Figueroa, Chabraeus, Sir Hans Sloane, Langius, and Du Mont.

In the seventeenth and eighteenth centuries, the poets and dramatists of France, Italy, and England found a plentiful supply in what had already been written on coffee; to say nothing of the inspiration offered by the drink itself, and by the society of the cafés of the period.

French poets, familiar with Latin, first took coffee as the subject of their verse. Vaniére sang its praises in the eighth book of his *Praedium rusticum;* and Fellon, a Jesuit professor of Trinity College, Lyons, wrote a didactic poem called, *Faba Arabica, Carmen,* which is included in the *Poemata didascalica* of d'Olivet.

Abbé Guillaume Massieu's *Carmen Caffaeum,* composed in 1718, has been referred to in chapter III. It was read at the Academy of Inscriptions. One of the panegyrists of this author, de Boze, in his *Elogé de Massieu,* says that if Horace and Virgil had known of coffee, the poem might easily have been attributed to them; and Thery, who translated it into French, says "it is a pearl of elegance in a rare jewel case."

The following translation of the poem from the Latin original was made for this work:

COFFEE

A Poem by Guillaume Massieu of the French Academy

(A literal prose translation from the original Latin in the British Museum.)

How coffee first came to our shores,
What the nature of the divine drink is, what its use,
How it brings ready aid to man against every kind of evils,
I shall here begin to tell in simple verse.

You soft-spoken men, who have often tried the sweetness of this drink,
If it has never deceived your wishes or mocked your hopes
With its empty results, be propitious and lend a willing ear to our song.
And may you, O Phoebus, kindly be present, to acknowledge
As your gift the power of herbs and healthful plants, and to
Dispel sad diseases from our bodies; for they say you are
The author of this blessing, and may you spread your
Gifts among peoples, and everywhere far and wide throughout the entire world.

Across Libya afar, and the seven mouths of the swollen Nile,
Where Asia most joyfully spreads in immense fields
Rich in various resources and filled with fragrant woods,
A region extends. The Sabeans of old inhabited it.
I believe indeed Nature, that best parent of all things,
Loved this place more than all others with a tender love.
Here the air of Heaven always breathes more mildly.
The sun has a gentler power; here are flowers of a different clime;
And the earth with fertile bosom brings forth various fruits,
Cinnamon, casia, myrrh, and fragrant thyme.
Amid the resources and gifts of this blessed land,
Turned to the sun and the warm south winds,
A tree spontaneously lifts itself into the upper air.
Growing nowhere else, and unknown in earlier centuries,
By no means great in size, it stretches not far its
Spreading branches, nor lifts a lofty top to heaven;
But lowly, after the manner of myrtle or pliant broom,
It rises from the ground. Many a nut bends its rich branches.
Small, like a bean, dark and dull in color,
Marked by a slight groove in the centre of its hull.

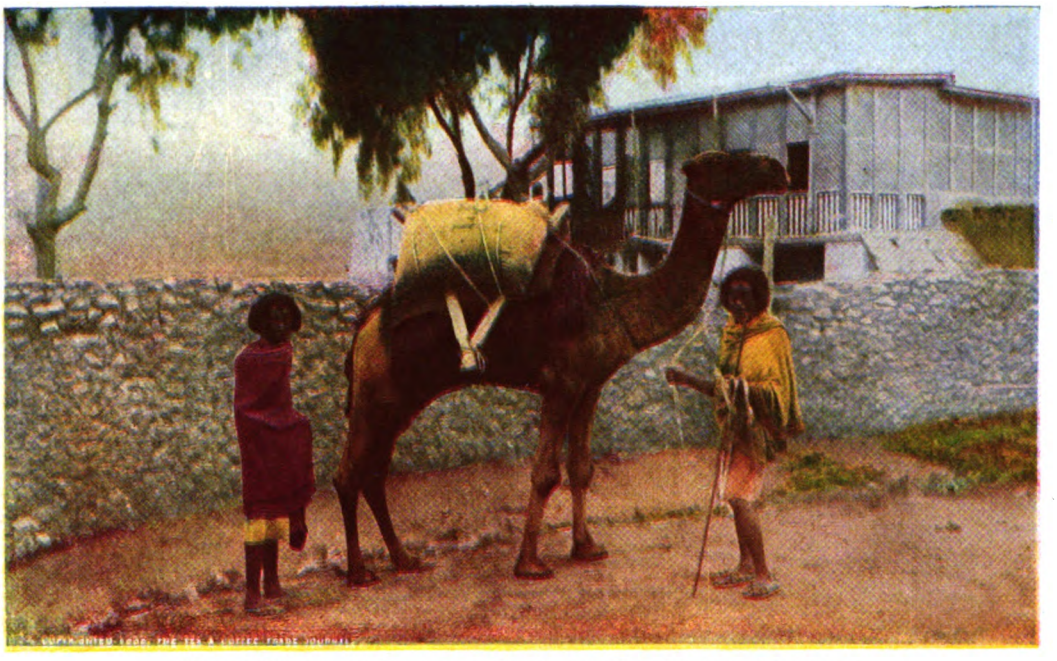
To transplant this growth to our own fields
Many have tried, and to cultivate it with great care.
In vain; for the plant has not responded to the zeal
And desires of the planters, and has rendered vain their long labor;
Before day the root of the tender herb has withered away.
Either this has happened through fault of climate, or grudging
Earth refuses to furnish fit nourishment to the foreign plant.

Therefore come thou, whoever shall be possesed by a love for coffee,
Do not regret having brought the healthful bean from the far
Remote world of Arabia; for this is its bountiful mother country.
The soothing draught first flowed from those regions through other
Peoples; thence through all Europe and Asia, and next made its way through the entire world.

Therefore, what you shall know to be sufficient for your needs,
Do you prepare long beforehand; let it be your care to have collected
Yearly a copious store, and providently fill small granaries,
As of yore the farmer, early mindful and provident of the future,
Collected crops from his fields and garnered them in his barns,
And turned his attention to the coming year.

None the less, meanwhile, must the utensils for coffee be cared for.
Let not vessels suited for drinking the beverage be lacking,
And a pot, whose narrow neck should be topped by a small cover
And whose body should swell gradually into an oblong shape.
When these things shall have been provided by you, let your
Next care be to roast well the beans with flames, and to grind them when roasted.
Nor should the hammer cease to crush them with many a blow,
Until they lay aside their hardness, and when thoroughly ground,
Become fine powder; which forthwith pack either in a bag or a box made for such uses.
And wrap it in leather, and smear it over with soft wax, lest
Narrow chinks be open, or hidden channels.
Unless you prevent these, by a secret path gradually small
Particles and whatever of value exists, and the entire strength,
Would leave, wasting into empty air.

There is also a hollow machine, like a small tower, which they
Call a mill, in which you can bruise the useful fruit of the
Roasted bean and crush it with frequent rubbing;



CAMEL TRANSPORT BETWEEN HARAR AND DIRE-DAOUA, ABYSSINIA

SUN-DRYING IN LA LAGUNA, PHILIPPINE ISLANDS

COFFEE SCENES IN THE NEAR AND THE FAR EAST

A revolving pivot in the middle, on an easy wheel turning,
Twists its metal joints on a creaking stem.
The top of the wheel, you know, is pierced with an ivory handle
Which will have to be turned by hand, through a thousand revolutions,
And through a thousand circles it moves the pivot.
When you put a kernel in, you will turn the handle with quick hand —
No delay — and you will wonder how the crackling kernel is
With much grinding quickly reduced to a powder.
Once only the lower compartment receives on its kindly bosom
The crushed grains, which are placed in the very depths of the box.

But why do we linger over these less important matters?
Greater things call us. Then is it time to drain the sweet
Draught, either under the new light of the early sun
In the morning, when an empty stomach demands food;
Or, when, after the splendid feasts of a magnificent table
The overburdened stomach suffers from too heavy load, and
Unequal to the demands made upon it, seeks the aid of external heat.
Then come, when now the pot grows ruddy in the fire
Crackling beneath, and you shall behold the liquid, swelling
With mingled powdered coffee, now bubble around the brim,
Draw it from the fire. Unless you should do this, the force of
The water would break forth suddenly, overflowing, and would
Sprinkle the beverage on the fire beneath.
Therefore, let no such accident disturb your joys.
You should keep watch carefully when the water no longer
Restrains itself and bubbles with the heat; then return
The pot to the fire thrice and four times, until the powdered
Coffee steams in the midst of the fire and blends thoroughly with the surrounding water.

This soothing drink ought to be boiled with skill, to be drunk
With art — not in the way men are wont to drink other beverages —
And with reason; for when you shall have taken it steaming from
A quick fire, and gradually all the dregs have settled to the
Very bottom, you shall not drink it impatiently at one gulp,
But rather, sip it little by little, and between draughts
Contrive pleasant delays; and sipping, drain it in long draughts,
So long as it is still hot and burns the palate.

For then it is better, then it permeates our inmost bones, and
Penetrating within to the center of our vitals and our marrow,
It pervades all our body with its vivifying strength.
Often even merely inhaling the odor with their nostrils, men
Have welcomed it, when it has bubbled up from the bottom,
More refreshing than the breeze. So much pleasure is there in a delicious odor.

And now there remains awaiting us the other part of our task,
To make known the secret strength of the divine draught.
But who could hope to understand this wonderful blessing
Or to be able to pursue so great a miracle in verse?
For really, when coffee has quietly glided into your body,
Taking itself within, it sheds a vital warmth through your
Limbs, and inspires joyous strength in your heart. Then if
There is anything undigested, with fire's help, it heats the
Hidden channels, and loosens the thin pores, through which the
Useless moisture exudes, and seeds of diseases flee from all your veins.

Wherefore come, O you who have a care for your health!
You, whose triple chin hangs on your breast,
Who drag your heavy stomach of great bulk,
It is fitting for you, first of all, to indulge in the warm
Beverage; for indeed it will dry the hideous flow of moisture
Which oppresses your limbs, and sends forth streams of perspiration from your whole body.
And in a short time, the swelling of your fat belly will
Gradually begin to decrease, and it will lighten your members, now oppressed by their heavy weight.

O happy peoples, on whom Titan, rising, looks with his first light!
Here, a rather free use of wine has never done harm.
Law and religion forbid us to quaff the flowing wine.
Here one lives on coffee. Here, then, flourishing with joyous strength
One pursues life and knows not what diseases are,
Nor that child of Bacchus and companion of high living — Gout;
Nor what innumerable diseases through this union are ready to attack our world.

Yet, indeed, the soothing power of this invigorating drink
Drives sad cares from the heart, and exhilarates the spirits.

I have seen a man, when he had not yet drained a mighty
Draught of this sweet nectar, walk silently with slow gait,
His brow sad, and forehead rough with forbidding wrinkles.
This same man who had hardly bathed his throat with the sweet
Drink — no delay — clouds fled from his wrinkled brow; and
He took pleasure in teasing all with his witty sayings.
Nor yet did he pursue any one with bitter laughter. For this
Harmless drink inspires no desire of offending, the venom
Is lacking, and pleasant laughter without bitterness pleases.

And in the entire East this custom of coffee drinking
Has been accepted. And, now, France; you adopt the foreign custom,
So that public shops, one after the other, are opened for
Drinking Coffee. A hanging sign of either ivy or laurel invites the passers-by.
Hither in crowds from the entire city they assemble, and
While away the time in pleasant drinking.
And when once the feelings have grown warm, acted upon by
The gentle heat, then good-humored laughter, and pleasant
Arguments increase. General gaiety ensues, the places about resound with joyous applause.
But never does the liquid imbibed overpower weary minds, but
Rather, if ever slumber presses their heavy eyes and dulls
The brain; and their strength, blunted, grows torpid in the
Body, coffee puts sleep to flight from the eyes, and slothful inactivity from the whole frame.
Therefore to absorb the sweet draught would be an advantage
For those whom a great deal of long-continued labor awaits
And those who need to extend their study far into the night.

And here I shall make known who taught the use of this pleasant
Drink; for its virtue, unknown, has lain hidden through many
Years; and reviewing, I shall relate the matter from the very beginning.

An Arab shepherd was driving his young goats to the well-known
Pastures. They were wandering through lonely wastes and cropping
The grasses, when a tree heavy with many berries—never seen before—met their eyes.
At once, as they were able to reach the low branches, they began
To pull off the leaves with many a nibble, and to pluck the tender
Growth. Its bitterness attracts. The shepherd, not knowing this,
Was meanwhile singing on the soft grass and telling the story of his loves to the woods.
But when the evening star, rising, warned him to leave the field,
And he led back his well-fed flock to their stalls, he perceived
That the beasts did not close their eyes in sweet sleep, but
Joyous beyond their wont, with wonderful delight throughout the
Whole night jumped about with wanton leaps. Trembling with sudden
Fear, the shepherd stood amazed; and crazed by the sound, he
Thought these things were being done through some wicked trick of a neighbor, or by magic art.

Not far from here a holy band of brethren had built their
Humble home in a remote valley; their lot it was to chant
Praises of God, and to load his altars with fitting gifts.
Although throughout the night the deep-toned bell resounded
With great din, and summoned them to the sacred temple, often
The coming of dawn found them lingering on their couches,
Having forgotten to rise in the middle of the night.
So great was their love of sleep!

In charge of the sacred temple, revered and obeyed by his
Willing brethren, was the master, an aged man, a heavy mass of white hair on head and chin.
The shepherd, hastening, came to him and told him the story,
Imploring his aid. The old man smiled to himself; but
He agreed to go, and investigate the hidden cause of the miracle.

When he has come to the hills, he observes the lambs, together
With their mothers, gnawing the berries of an unknown plant,
And cries, "This is the cause of the trouble!" And saying no
More, he at once picks the smooth fruit from the heavily-laden
Tree, and carries it home, places it, when washed, in pure
Water, cooking it over the fire, and fearlessly drinks a large
Cup of it. Forthwith a warmth pervades his veins, a living
Force is diffused through his limbs, and weariness is dispelled from his aged body.
Then, at length, the old man exulting in the blessing thus found,
Rejoices, and kindly shares with all his brothers. They eagerly
At early night-fall, indulge in pleasant banquets and drain great bowls.

No longer is it hard for them to break off sweet
sleep and to leave their soft beds as formerly.
O fortunate ones! whose hearts the sweet
draught has often
Bathed. No sluggish torpor holds their minds,
they briskly
Rise for their prescribed duties and rejoice to
outstrip the rays of the first light.

You also, whose care it is to feed minds with
divine eloquence
And to terrify with your words the souls of the
guilty, you also
Should indulge in the pleasant drink; for, as
you know, it
Strengthens weakness. Keen vigor is gained
for the limbs from
This source, and spreads through the whole
body. From this source,
Too, shall come new strength and new power
to your voice.
You also, whom oft harmful vapors harass,
whose sick brain the dangerous vertigo
shakes,
Ah, come! In this sweet liquid is a ready medicine
And none other better to calm undue agitation.
Apollo planted this power for himself, they say,
The story is worthy to be sung.

Once a disease most deadly to life assailed the
disciples of
Apollo's Mount. It spread far and wide, and
attacked the brain itself.
Already all the people of genius were suffering
with this
Disease; and the arts, deserted, were languishing along with
The workers. Some even pretended to have the
disease, and
Assuming feigned suffering, gave themselves
over to an idle life.
Unpleasing work grew distasteful, and deadly
inertia increased
Everywhere. It pleased all, now released from
work and labors,
To indulge in care-free quiet.
Apollo, full of indignation, did not endure
longer that the deadly
Contagion of such easy ruin should creep over
them thus. And,
That he might take away from seers all means
of deception, he
Enticed from the rich bosom of the earth this
friendly plant,
Than which no other is more ready either to
refresh for work the
Mind wearied by long studies, or to sooth
troublesome sorrows of the head.

O plant, given to the human race by the gift of
the Gods!
No other out of the entire list of plants has
ever vied with you.
On your account sailors sail from our shores
And fearlessly conquer the threatening winds,
sandbanks and
Dreadful rocks. With your nourishing growth
you surpass dittany,
Ambrosia, and fragrant panacea. Grim diseases
flee from you. To
You trusting health clings as a companion, and
also the merry
Crowd, conversation, amusing jokes, and sweet
whisperings.

The poet Belighi toward the close of the sixteenth century composed a poem, which, freely translated, runs:

In Damascus, in Aleppo, in great Cairo,
At every turn is to be found
That mild fruit which gives so beloved a drink,
Before coming to court to triumph.
There this seditious disturber of the world,
Has, by its unparalleled virtue,
Supplanted all wines from this blessed day.

Jacques Delille (1738 - 1813) the didactic poet of nature, in *chant vi* of his *"Three Reigns of Nature,* thus apostrophizes the "divine nectar" and describes its preparation:

DIVINE COFFEE

Translation from the French

A liquid there is to the poet most dear,
'T was lacking to Virgil, adored by Voltaire,
'T is thou, divine coffee, for thine is the art,
Without turning the head yet to gladden the
heart.
And thus though my palate be dulled by age,
With joy I partake of thy dear beverage.
How glad I prepare me thy nectar most precious,
No soul shall usurp me a rite so delicious;
On the ambient flame when the black charcoal
burns,
The gold of thy bean to rare ebony turns,
I alone, 'gainst the cone, wrought with fierce
iron teeth,
Make thy fruitage cry out with its bitter-sweet
breath;
Till charmed with such perfume, with care I
entrust
To the pot on my hearth the rare spice-laden
dust:
First to calm, then excite, till it seethingly
whirls,
With an eye all attenion I gaze till it boils.
At last now the liquid comes slow to repose;
In the hot, smoking vessel its wealth I depose,
My cup and thy nectar; from wild reeds expressed,
America's honey my table has blest;
All is ready; Japan's gay enamel invites —
And the tribute of two worlds thy prestige
unites:
Come, Nectar divine, inspire thou me,
I wish but Antigone, dessert and thee;
For scarce have I tasted thy odorous steam,
When quick from thy clime, soothing warmths
round me stream,
Attentive my thoughts rise and flow light as
air,
Awaking my senses and soothing my care.
Ideas that but late moved so dull and depressed,
Behold, they come smiling in rich garments
dressed!
Some genius awakes me, my course is begun;
For I drink with each drop a bright ray of the
sun.

Maumenet addressed to Galland the following verses:

If slumber, friend, too near, with some late glass should creep —
Dull, poppy-perfumed sleep —
If a too fumous wine confounds at length thy brain —
Take coffee then — this juice divine
Shall banish sleep and steam of vap'rous wine,
And with its timely aid fresh vigor thou shalt find.

Castel, in his poem, *Les Plantes* (The Plants) could not omit the coffee trees of the tropics. He thus addressed them in 1811:

Bright plants, the favorites of Phoebus,
In these climes the rarest virtues offer,
Delicious Mocha, thy sap, enchantress,
Awakens genius, outvalues Parnasse!

In a collection of the *Songs of Brittany* in the Brest library there are many stanzas in praise of coffee. A Breton poet has composed a little piece of ninety-six verses in which he describes the powerful attraction that coffee has for women and the possible effects on domestic happiness. The first time that coffee was used in Brittany, says an old song of that country, only the nobility drank it, and now all the common people are using it, yet the greater part of them have not even bread.

A French poet of the eighteenth century produced the following:

LINES ON COFFEE

Translation from the French

Good coffee is more than a savory cup,
Its aroma has power to dry liquor up.
By coffee you get upon leaving the table
A mind full of wisdom, thoughts lucid, nerves stable;
And odd tho' it be, 't is none the less true,
Coffee's aid to digestion permits dining anew.
And what 's very true, tho' few people know it,
Fine coffee 's the basis of every fine poet;
For many a writer as windy as Boreas
Has been vastly improved by the drink ever gloricus.
Coffee brightens the dullness of heavy philosophy,
And opens the science of mighty geometry.
Our law-makers, too, when the nectar imbibing,
Plan wondrous reforms, quite beyond the describing;
The odor of coffee they delight in inhaling,
And promise the country to alter laws ailing.
From the brow of the scholar coffee chases the wrinkles,
And mirth in his eyes like a firefly twinkles;
And he, who before was but a hack of old Homer,
Becomes an original, and that 's no misnomer.
Observe the astronomer who 's straining his eyes
In watching the planets which soar thro' the skies;
Alas, all those bright bodies seem hopelessly far
Till coffee discloses his own guiding star.
But greatest of wonders that coffee effects
Is to aid the news-editor as he little expects;
Coffee whispers the secrets of hidden diplomacy,
Hints rumors of wars and of scandals so racy.
Inspiration by coffee must be nigh unto magic,
For it conjures up facts that are certainly tragic;
And for a few pennies, coffee's small price per cup,
"Ye editor's" able to swallow the Universe up.

Esmenard celebrated Captain de Clieu's romantic voyage to Martinique with the coffee plants from the Jardin des Plantes, in some admirable verses quoted in chapter II.

Among other notable poetic flights in praise of coffee produced in France mention should be made of: *"L'Elogé du Cafe"* (Eulogy of Coffee) a song in twenty-four couplets, Paris, Jacques Estienne, 1711; *Le Café* (Coffee), a fragment from the fourth *chant* (song) of *La Grandeur de Dieu dans les merveilles de la Nature* (The Grandeur of God in the Wonders of Nature) Marseilles; *Le Café*, extract from the fourth gastronomic song, by Berchoux; *"A Mon Café"* (To My Coffee), stanzas written by Ducis; *Le Café*, anonymous stanzas inserted in the *Macedoine Poetique*, 1824; a poem in Latin in the Abbé Olivier's collection; *Le Bouquet Blanc et le Bouquet Noir, poesie en quatre chants; Le Café*, C. D. Mery, 1837; *"Elogé du Café*, S. Melaye, 1852.

Many Italian poets have sung the praises of coffee. L. Barotti wrote his poem, *Il Caffè* in 1681. Giuseppe Parini (1729-1799), Italy's great satirical and lyric poet and critic of the eighteenth century, in *Il Giorno* (*The Day*), gives a delightful pen picture of the manners and customs of Milan's polite society of the period. William Dean Howells quotes as follows from these poems (his own translation) in his *Modern Italian Poets*. The feast is over, and the lady signals to the cavalier that it is time to leave the table:

Spring to thy feet
The first of all, and, drawing near thy lady,
Remove her chair and offer her thy hand,
And lead her to the other room, nor suffer longer

That the stale reek of viands shall offend
Her delicate sense. Thee with the rest invites
The grateful odor of the coffee, where
It smokes upon a smaller table hid
And graced with Indian webs. The redolent gums
That meanwhile burn, sweeten and purify
The heavy atmosphere, and banish thence
All lingering traces of the feast. Ye sick
And poor, whom misery or whom hope, perchance!
Has guided in the noonday to these doors,
Tumultuous, naked, and unsightly throng,
With mutilated limbs and squalid faces,
In litters and on crutches from afar
Comfort yourselves, and with expanded nostrils
Drink in the nectar of the feast divine
That favourable zephyrs waft to you;
But do not dare besiege these noble precincts,
Importunately offering her that reigns
Within your loathsome spectacle of woe!
And now, sir, 't is your office to prepare
The tiny cup that then shall minister,
Slow sipped, its liquor to thy lady's lips;
And now bethink thee whether she prefer
The boiling beverage much or little tempered
With sweet; or if, perchance, she likes it best,
As doth the barbarous spouse, then when she sits
Upon brocades of Persia, with light fingers,
The bearded visage of her lord caressing.

This is from *Il Mezzogiorno* (*Noon*). The other three poems, rounding out *The Day*, are *Il Mattino* (*Morning*), *Il Vespro* (*Evening*), and *La Notte* (*Night*). In *Il Mattino*, Parini sings:

Should dreary hypochondria's woes oppress thee,
Should round thy charming limbs in too great measure
Thy flesh increase, then with thy lips do honor
To that clear beverage, made from the well-bronzed,
The smoking, ardent beans Aleppo sends thee,
And distant Mocha too, a thousand ship-loads;
When slowly sipped it knows no rival.

Belli's *Il Caffè* supplies a partial bibliography of the Italian literature on coffee. There are many poems, some of them put to music. As late as 1921, there were published in Bologna some advertising verses on coffee by G. B. Zecchini with music by Cesare Cantino.

Pope Leo XIII, in his Horatian poem on *Frugality* composed in his eighty-eighth year, thus verses his appreciation of coffee:

Last comes the beverage of the Orient shore,
Mocha, far off, the fragrant berries bore.
Taste the dark fluid with a dainty lip,
Digestion waits on pleasure as you sip.

Peter Altenberg, a Vienna poet, thus celebrated the cafés of his native city:

To The Coffee House!

When you are worried, have trouble of one sort or another—to the coffee house!
When she did not keep her appointment, for one reason or other—to the coffee house!
When your shoes are torn and dilapidated—coffee house!
When your income is four hundred crowns and you spend five hundred—coffee house!
You are a chair warmer in some office, while your ambition led you to seek professional honors—coffee house!
You could not find a mate to suit you—coffee house!
You feel like committing suicide—coffee house!
You hate and despise human beings, and at the same time you can not be happy without them—coffee house!
You compose a poem which you can not inflict upon friends you meet in the street — coffee house!
When your coal scuttle is empty, and your gas ration exhausted—coffee house!
When you need money for cigarettes, you touch the head waiter in the—coffee house!
When you are locked out and haven't the money to pay for unlocking the house door—coffee house!
When you acquire a new flame, and intend provoking the old one, you take the new one to the old one's—coffee house!
When you feel like hiding you dive into a—coffee house!
When you want to be seen in a new suit—coffee house!
When you can not get anything on trust anywhere else—coffee house!

English poets from Milton to Keats celebrated coffee. Milton (1608 - 1674) in his *Comus* thus acclaimed the beverage:

One sip of this
Will bathe the drooping spirits in delight
Beyond the bliss of dreams.

Alexander Pope, poet and satirist (1688 - 1744), has the oft-quoted lines:

Coffee which makes the politician wise,
And see through all things with his half-shut eyes.

In Carruthers' *Life of Pope*, we read that this poet inhaled the steam of coffee in order to obtain relief from the headaches to which he was subject. We can well understand the inspiration which called forth from him the following lines when he was not yet twenty:

As long as Mocha's happy tree shall grow,
While berries crackle, or while mills shall go;
While smoking streams from silver spouts shall glide,
Or China's earth receive the sable tide,
While coffee shall to British nymphs be dear,
While fragrant steams the bended head shall cheer,
Or grateful bitters shall delight the taste,
So long her honors, name and praise shall last.

Pope's famous *Rape of the Lock* grew out of coffee-house gossip. The poem contains the passage on coffee already quoted:

For lo! the board with cups and spoons is crowned;
The berries crackle and the mill turns round;
On shining altars of japan they raise
The silver lamp: the fiery spirits blaze:
From silver spouts the grateful liquors glide,
While China's earth receives the smoking tide.
At once they gratify their scent and taste,
And frequent cups prolong the rich repast.
Straight hover round the fair her airy band;
Some, as she sipped, the fuming liquor fanned:
Some o'er her lap their careful plumes displayed,
Trembling, and conscious of the rich brocade.
Coffee (which makes the politician wise,
And see through all things with his half-shut eyes.)
Sent up in vapors to the baron's brain
New stratagems, the radiant lock to gain.

Pope often broke the slumbers of his servant at night by calling him to prepare a cup of coffee; but for regular serving, it was his custom to grind and to prepare it upon the table.

William Cowper's fine tribute to "the cups that cheer but not inebriate", a phrase which he is said to have borrowed from Bishop Berkeley, was addressed to tea and not to coffee, to which it has not infrequently been wrongfully attributed. It is one of the most pleasing pictures in *The Task*.

Cowper refers to coffee but once in his writings. In his *Pity for Poor Africans* he expresses himself as "shocked at the ignorance of slaves":

I pity them greatly, but I must be mum
For how could we do without sugar and rum?
Especially sugar, so needful we see;
What! Give up our desserts, our coffee and tea?

thus contenting himself, like many others, with words of pity where more active protest might sacrifice his personal ease and comfort.

Leigh Hunt (1784-1859), and John Keats (1795-1834), were worshippers at the shrine of coffee; while Charles Lamb, famous poet, essayist, humorist, and critic, has celebrated in verse the exploit of Captain de Clieu in the following delightful verses:

THE COFFEE SLIPS

Whene'er I fragrant coffee drink,
I on the generous Frenchman think,
Whose noble perseverance bore
The tree to Martinico's shore.
While yet her colony was new,
Her island products but a few;
Two shoots from off a coffee tree
He carried with him o'er the sea.
Each little tender coffee slip
He waters daily in the ship.
And as he tends his embryo trees,
Feels he is raising 'midst the seas
Coffee groves, whose ample shade
Shall screen the dark Creolian maid.
But soon, alas! His darling pleasure
In watching this his precious treasure
Is like to fade—for water fails
On board the ship in which he sails.
Now all the reservoirs are shut,
The crew on short allowance put;
So small a drop is each man's share,
Few leavings you may think there are
To water these poor coffee plants·—
But he supplies their grasping wants,
Even from his own dry parched lips
He spares it for his coffee slips.
Water he gives his nurslings first,
Ere he allays his own deep thirst,
Lest, if he first the water sip,
He bear too far his eager lip.
He sees them droop for want of more;
Yet when they reach the destined shore,
With pride the heroic gardener sees
A living sap still in his trees.
The islanders his praise resound;
Coffee plantations rise around;
And Martinico loads her ships
With produce from those dear-saved slips.

In John Keat's amusing fantasy, *Cap and Bells*, the Emperor Elfinan greets Hum, the great soothsayer, and offers him refreshment:

"You may have sherry in silver, hock in gold, or glass'd champagne
. . . what cup will you drain?"
"Commander of the Faithful!" answered Hum,
"In preference to these, I'll merely taste
A thimble-full of old Jamaica rum."
"A simple boon," said Elfinan; "thou mayst
Have Nantz, with which my morning coffee's laced."

But Hum accepts the glass of Nantz, without the coffee, "made racy with the third part of the least drop of *crème de citron*, crystal clear."

Numerous broadsides printed in London, 1660 to 1675, have been referred to in chapter X. Few of them possess real literary merit.

"Coffee and Crumpets" has been much quoted. It was published in *Fraser's Magazine*, in 1837. Its author calls himself "Launcelot Littledo". The poem is quite long, and only those portions are printed

here that refer particularly to "Yemen's fragrant berry":

COFFEE AND CRUMPETS

By Launcelot Littledo of Pump Court, Temple, Barrister-at-law.

There 's ten o'clock! From Hampstead to the Tower
The bells are chanting forth a lusty carol;
Wrangling, with iron tongues, about the hour,
Like fifty drunken fishwives at a quarrel;
Cautious policemen shun the coming shower;
Thompson and Fearon tap another barrel;
"Dissolve frigus, lignum super foco.
Large reponens." Now, come Orinoco!

To puff away an hour, and drink a cup,
A brimming *breakfast*-cup of ruddy Mocha—
Clear, luscious, dark, like eyes that lighten up
The raven hair, fair cheek, and *bella boca*
Of Florence maidens. I can never sup
Of perigourd, but (*guai a chi la tocca!*)
I'm doomed to indigestion. So to settle
This strife eternal,—Betty, bring the kettle!

Coffee! oh, Coffee! Faith, it is surprising.
'Mid all the poets, good, and bad, and worse,
Who've scribbled (Hock or Chian eulogizing)
Post and papyrus with "immortal verse"—
Melodiously similitudinising
In Sapphics languid or Alcaics terse
No one, my little brown Arabian berry,
Hath sung thy praises—'tis surprising! very!

Were I a poet now, whose ready rhymes,
Like Tommy Moore's, came tripping to their places—
Reeling along a merry troll of chimes,
With careless truth,—a dance of fuddled Graces;
Hear it—*Gazette, Post, Herald, Standard, Times,*
I'd write an epic! Coffee for its basis;
Sweet as e'er warbled forth from cockney throttles
Since Bob Montgomery's or Amos Cottle's.

Thou sleepy-eyed Chinese—enticing siren,
Pekoe! the Muse hath said in praise of thee,
"That cheers but not inebriates"; and Byron
Hath called thy sister "Queen of Tears", Bohea!
And he, Anacreon of Rome's age of iron,
Says, how untruly *"Quis non potius te."*
While coffee, thou—bill-plastered gables say,
Art like old Cupid, "roasted every day."

I love, upon a rainy night, as this is,
When rarely and more rare the coaches rattle
From street to street, to sip thy fragrant kisses;
While from the Strand remote some drunken battle
Far-faintly echoes, and the kettle hisses
Upon the glowing hob. No tittle-tattle
To make a single thought of mine an alien
From thee, my coffee-pot, my fount Castalian.

The many intervening verses cover an unhappy termination to an otherwise delightful ball. He is sitting with his charming "Mary", about to ask her to be his bride, when the unfortunate overturning of a glass of red wine into her white satin gown, at the same time overthrows all his dreams of bliss, "for the shrew displaces the angel he adored", and he resigns himself to the life of "a man in chambers."

'Tis thus I sit and sip, and sip and think,
And think and sip again, and dip in *Fraser*,
A health, King Oliver! to thee I drink:
Long may the public have thee to amaze her.
Like *Figaro*, thou makest one's eyelids wink,
Twirling on practised palm thy polished razor—
True Horace temper, smoothed on attic strop;
Ah! thou couldst *"faire la barbe a tout l'Europe."*

* * *

Come, Oliver, and tell us what the news is;
An easy chair awaits thee—come and fill 't.
Come, I invoke thee, as they do the muses,
And thou shalt choose thy tipple as thou wilt.
And if thy lips my sober cup refuses,
For ruddier drops the purple grape has spilt,
We can sing, sipping in alternate verses,
Thy drink and mine, like Corydon and Thyrsis.

* * *

Fill the bowl, but not with wine,
Potent port, or fiery sherry;
For this milder cup of mine
Crush me Yemen's fragrant berry.

* * *

Gentle is the grape's deep cluster,
But the wine's a wayward child;
Nectar *this!* of meeker lustre—
This the cup that "draws it mild."
Deeply drink its streams divine—
Fill the cup, but not with wine.

Prior and Montague inserted the following poetic vignette in their *City Mouse and Country Mouse*, written in burlesque of Dryden's *Hind and Panther*:

Then on they jogg'd; and since an hour of talk
Might cut a banter on the tedious walk,
As I remember, said the sober mouse,
I've heard much talk of the Wits' Coffee-house;
Thither, says Brindle, thou shalt go and see
Priests supping coffee, sparks and poets tea;
Here rugged frieze, there quality well drest,
These baffling the grand Senior, those the Test,
And there shrewd guesses made, and reasons given,
That human laws were never made in heaven;
But, above all, what shall oblige thy sight,
And fill thy eyeballs with a vast delight,
Is the poetic judge of sacred wit,
Who does i' th' darkness of his glory sit;
And as the moon who first receives the light,
With which she makes these nether regions bright,
So does he shine, reflecting from afar
The rays he borrowed from a better star;
For rules, which from Corneille and Rapin flow,
Admired by all the scribbling herd below,
From French tradition while he does dispense
Unerring truths, 't is schism, a damned offense,
To question his, or trust your private sense.

Geoffrey Sephton, an English poet and novelist, many years resident in Vienna, whose fantastic stories and fairy tales are well known in Europe, has written the following sonnets on coffee:

TO THE MIGHTY MONARCH, KING KAUHEE[1]

By Geoffrey Sephton

I

Away with opiates! Tantalising snares
To dull the brain with phantoms that are not.
Let no such drugs the subtle senses rot
With visions stealing softly unawares
Into the chambers of the soul. Nightmares
Ride in their wake, the spirits to besot.
Seek surer means to banish haunting cares:
Place on the board the steaming Coffee-pot!
O'er luscious fruit, dessert and sparkling flask,
Let proudly rule as King the Great Kauhee,
For he gives joy divine to all that ask,
Together with his spouse, sweet *Eau de Vie.*
Oh, let us 'neath his sovran pleasure bask.
Come, raise the fragrant cup and bend the knee!

II

O great Kauhee, thou democratic Lord,
Born 'neath the tropic sun and bronzed to splendour
In lands of Wealth and Wisdom, who can render
Such service to the wandering Human Horde
As thou at every proud or humble board?
Beside the honest workman's homely fender,
'Mid dainty dames and damsels sweetly tender,
In china, gold and silver, have we poured
Thy praise and sweetness, Oriental King.
Oh, how we love to hear the kettle sing
In joy at thy approach, embodying
The bitter, sweet and creamy sides of life;
Friend of the People, Enemy of Strife,
Sons of the Earth have born thee labouring.

In America, too, poets have sung in praise of coffee. The somewhat doubtful "kind that mother used to make" is celebrated in James Whitcomb Riley's classic poem:

LIKE HIS MOTHER USED TO MAKE[2]

"Uncle Jake's Place," St. Jo., Mo., 1874.

"I was born in Indiany," says a stranger, lank and slim,
As us fellers in the restaurant was kindo' guyin' him,
And Uncle Jake was slidin' him another punkin pie
And a' extry cup o' coffee, with a twinkle in his eye—
"I was born in Indiany—more'n forty years ago—
And I hain't ben back in twenty—and I'm workin' back'ards slow;
But I've et in ever' restarunt twixt here and Santy Fee,
And I want to state this coffee tastes like gittin' home, to me!
"Pour us out another, Daddy," says the feller, warmin' up,
A-speakin' crost a saucerful, as Uncle tuk his cup—
"When I see yer sign out yander," he went on, to Uncle Jake—
"'Come in and git some coffee like yer mother used to make'—
I thought of *my* old mother, and the Posey county farm,
And me a little kid again, a-hangin' in her arm,
As she set the pot a-bilin', broke the eggs and poured 'em in"—
And the feller kindo' halted, with a trimble in his chin;
And Uncle Jake he fetched the feller's coffee back, and stood
As solemn, fer a minute, as a' undertaker would;
Then he sorto' turned and tiptoed to'rds the kitchen door—and next,
Here comes his old wife out with him, a-rubbin' of her specs—
And she rushes fer the stranger, and she hollers out, "It's him!—
Thank God we've met him comin'!—Don't you know yer mother, Jim?"
And the feller, as he grabbed her, says,—"You bet I hain't forgot—
But", wipin' of his eyes, says he, "yer coffee's mighty hot!"

One of the most delightful coffee poems in English is Francis Saltus Saltus' (d. 1889) sonnet on "the voluptuous berry", as found in *Flasks and Flagons*:

COFFEE

Voluptuous berry! Where may mortals find
Nectars divine that can with thee compare,
When, having dined, we sip thy essence rare,
And feel towards wit and repartee inclined?

Thou wert of sneering, cynical Voltaire,
The only friend; thy power urged Balzac's mind
To glorious effort; surely Heaven designed
Thy devotees superior joys to share.

Whene'er I breathe thy fumes, 'mid Summer stars,
The Orient's splendent pomps my vision greet.
Damascus, with its myriad minarets, gleams!
I see thee, smoking, in immense bazaars,
Or yet, in dim seraglios, at the feet
Of blond Sultanas, pale with amorous dreams!

Arthur Gray, in *Over the Black Coffee* (1902) has made the following contribution to the poetry of coffee, with an unfortunate reflection on tea, which might well have been omitted:

COFFEE

O, boiling, bubbling, berry, bean!
Thou consort of the kitchen queen—
Browned and ground of every feature,
The only aromatic creature,
For which we long, for which we feel,
The breath of morn, the perfumed meal.

[1] Kauhee (or *kahve*) is the Turkish for coffee.

[2] Copyright, 1913. Used by special permission of the publishers, the Bobbs-Merrill Co., Indianapolis, Ind.

For what is tea? It can but mean,
Merely the mildest go-between.
Insipid sobriety of thought and mind
It "cuts no figure"—we can find—
Save peaceful essays, gentle walks,
Purring cats, old ladies' talks—

* * *

But coffee! can other tales unfold.
Its history s written round and bold—
Brave buccaneers upon the "Spanish Main",
The army's march across the lenght'ning plain,
The lone prospector wandering o'er the hill,
The hunter's camp, thy fragrance all distill.

So here's a health to coffee! Coffee hot!
A morning toast! Bring on another pot.

The Tea and Coffee Trade Journal published in 1909 the following excellent stanzas by William A. Price:

AN ODE TO COFFEE

Oh, thou most fragrant, arcmatic joy, impugned, abused, and often stormed against,
And yet containing all the blissfulness that in a tiny cup could be condensed!
Give thy contemners calm, imperial scorn—
For thou wilt reign through ages yet unborn!

Some ancient Arab, so the legend tells, first found thee—may his memory be blest!
The worldwide sign of brotherhood today, the binding tie between the East and West!
Good coffee pleases in a Persian dell,
And Blackfeet Indians make it more than well.

The lonely traveler in the desert range, if thou art with him, smiles at eventide—
The sailor, as thy perfume bubbles forth, laughs at the ocean as it rages wide—
And where the camps of fighting men are found
Thy fragrance hovers o'er each battleground.

"Use, not abuse, the good things of this life"—that is a motto from the Prophet's days,
And, dealing with thee thus, we ne'er shall come to troublous times or parting of the ways.
Comfort and solace both endure with thee,
Rich, royal berry of the coffee tree!

The *New York Tribune* published in 1915 the following lines by Louis Untermeyer, which were subsequently included in his "——*and Other Poets.*"[1]

GILBERT K. CHESTERTON RISES TO THE TOAST OF COFFEE

Strong wine it is a mocker; strong wine it is a beast.
It grips you when it starts to rise; it is the Fabled Yeast.
You should not offer ale or beer from hops that are freshly picked,
Nor even Benedictine to tempt a benedict.
For wine has a spell like the lure of hell, and the devil has mixed the brew;
And the friends of ale are a scrt of pale and weary, witless crew—
And the taste of beer is a sort of a queer and undecided brown—
But, comrades, I give you coffee—drink it up, drink it down.
With a fol-de-rol-dol and a fol-de-rol-dee, etc.

Oh, cocoa's the drink for an elderly don who lives with an elderly niece;
And tea is the drink for studios and loud and violent peace—
And brandy's the drink that spoils the clothes when the bottle breaks in the trunk;
But coffee's the drink that is drunken by men who will never be drunk.
So, gentlemen, up with the festive cup, where Mocha and Java unite;
It clears the head when things are said too brilliant to be bright!
It keeps the stars from the golden bars and the lips cf the tipsy town;
So, here's to strong, black coffee—drink it up, drink it down!
With a fol-de-rol-dol and a fol-de-rol-dee, etc.

The American breakfast cup is celebrated in up-to-date American style in the following by Helen Rowland in the *New York Evening World*:

WHAT EVERY WIFE KNOWS

Give me a man who drinks good, hot, dark, strong coffee for breakfast!
A man who smokes a good, dark, fat cigar after dinner!
You may marry your milk-faddist, or your anti-coffee crank, as you will!
But I know the magic of the coffee pct!
Let me make my Husband's coffee—and I care not who makes eyes at him!
Give me two matches a day—
One to start the coffee with, at breakfast, and one for his cigar, after dinner!
And I defy all the houris in Christendom to light a new flame in his heart!

Oh, sweet supernal coffee-pot!
Gentle panacea of dcmestic troubles,
Faithful author of that sweet nepenthe which deadens all the ills that married folks are heir to.
Cheery, glittering, soul-soothing, warmed hearted, inanimate friend!
What wife can fail to admit the peace and serenity she owes to *you?*
To you, who stand between her and all her early morning troubles—
Between her and the before-breakfast grouch—
Between her and the morning-after headache—
Between her and the cold-gray-dawn scrutiny?
To you, who supply the golden nectar that stimulates the jaded masculine soul,
Soothes the shaky masculine nerves, stirs the fagged masculine mind, inspires the slow masculine sentiment,
And starts the sluggish blood a-flowing and the whole day right!

What is it, I ask you, when he comes down to breakfast dry of mouth, and touchy of temper—

[1] Copyright, 1916, by Henry Holt & Co., New York. Reprinted by permission.

That gives him pause, and silences that scintillating barb of sarcasm on the tip of his tongue,
With which he meant to impale you?
It is the sweet aroma of the coffee-pot—the thrilling thought of that first delicious sip!

What is it, on the morning after the club dance,
That hides your weary, little, washed-out face and straggling, uncurled coiffure from his critical eyes?
It is the generous coffee-pot, standing like a guardian angel between you and him!
And in those many vital psychological moments, during the honeymoon, which decide for or against the romance and happiness of all the rest of married life—
Those critical before-breakfast moments when temperament meets temperament, and will meets "won't"—
What is it that halts you on the brink of tragedy,
And distracts you from the temptation to answer back?
It is the absorbing anxiety of watching the coffee boil!
What is it that warms his veins and soothes your nerves,
And turns all the world suddenly from a dismal gray vale of disappointment to a bright rosy garden of hope—
And starts *another* day gliding smoothly along like a new motor car?
What is it that will do more to transform a man from a fiend into an angel than baptism in the River Jordan?
It is the first cup of coffee in the morning!

Coffee in Dramatic Literature

Coffee was first "dramatized", so to speak, in England, where we read that Charles II and the Duke of Yorke attended the first performance of *Tarugo's Wiles, or the Coffee House,* a comedy, in 1667, which Samuel Pepys described as "the most ridiculous and insipid play I ever saw in my life." The author was Thomas St. Serf. The piece opens in a lively manner, with a request on the part of its fashionable hero for a change of clothes. Accordingly, Tarugo puts off his "vest, hat, perriwig, and sword," and serves the guests to coffee, while the apprentice acts his part as a gentleman customer. Presently other "customers of all trades and professions" come dropping into the coffee house. These are not always polite to the supposed coffee-man; one complains of his coffee being "nothing but warm water boyl'd with burnt beans," while another desires him to bring "chocolette that's prepar'd with water, for I hate that which is encouraged with eggs." The pedantry and nonsense uttered by a "schollar" character is, perhaps, an unfair specimen of coffee-house talk; it is especially to be noticed that none of the guests ventures upon the dangerous ground of politics.

In the end, the coffee-master grows tired of his clownish visitors, saying plainly, "This rudeness becomes a suburb tavern rather than my coffee house"; and with the assistance of his servants he "thrusts 'em all out of doors, after the schollars and customers pay."

In 1694, there was published Jean Baptiste Rosseau's comedy, *Le Caffe,* which appears to have been acted only once in Paris, although a later English dramatist says it met with great applause in the French capital. *Le Caffe* was written in Laurent's café, which was frequented by Fontenelle, Houdard de la Motte, Dauchet, the abbé Alary Boindin, and others. Voltaire said that "this work of a young man without any experience either of the world of letters or of the theater seems to herald a new genius."

About this time it was the fashion for the coffee-house keepers of Paris, and the waiters, to wear Armenian costumes; for Pascal had builded better than he knew. In *La Foire Saint-Germain,* a comedy by Dancourt, played in 1696, one of the principal characters is old "Lorange, a coffee merchant clothed as an Armenian". In scene 5, he says to Mlle. Mousset, "a seller of house dresses" that he has been "a naturalized Armenian for three weeks."

Mrs. Susannah Centlivre (1667?-1723), in her comedy, *A Bold Stroke for a Wife,* produced about 1719, has a scene laid in Jonathan's coffee house about that period. While the stock jobbers are talking in the first scene of act II, the coffee boys are crying, "Fresh Coffee, gentlemen, fresh coffee? . . . Bohea tea, gentlemen?"

Henry Fielding (1707-1754) published *The Coffee-House Politician, or Justice caught in his own trap,"* a comedy, in 1730.

The Coffee House, a dramatick Piece by James Miller, was performed at the Theater Royal in Drury Lane in 1737. The interior of Dick's coffee house figured as an engraved frontispiece to the published version of the play.

The author states in the preface that "this piece is partly taken from a comedy of one act written many years ago in French by the famous Rosseau, called 'Le

Caffe', which met with great applause in Paris." The coffee house in the play is conducted by the Widow Notable, who has a pretty daughter for whom, like all good mothers, she is anxious to arrange a suitable marriage.

In the first scene, an acrimonious conversation takes place between Puzzle, the Politician, and Bays, the poet, in which squabble the Pert Beau and the Solemn Beau, and other habitués of the place take part. Puzzle discovers that a comedian and other players are in the room, and insists that they be ejected or forbidden the house. The Widow is justly incensed, and indignantly replies:

Forbid the Players my House, Sir! Why, Sir, I get more by them in a Week than I do by you in seven Years. You come here and hold a paper in your hand for an Hour, disturb the whole Company with your Politics, call for Pen and Ink, Paper and Wax, beg a Pipe of Tobacco, burn out half a Candle, eat half a Pound of Sugar, and then go away, and pay Two-pence for a Dish of Coffee. I could soon shut up my doors, if I had not some other good People to make amends for what I lose by such as you, Sir.

All join the Widow in scoffing and jeering, and exit the highly discomfited Puzzle. The pretty little Kitty tricks her mother with the aid of the Player, and marries the man of her choice, but is forgiven when he is found to be a gentleman of the Temple.

The play is in one act and has several songs. The last is one of five stanzas, with music "set by Mr. Caret:"

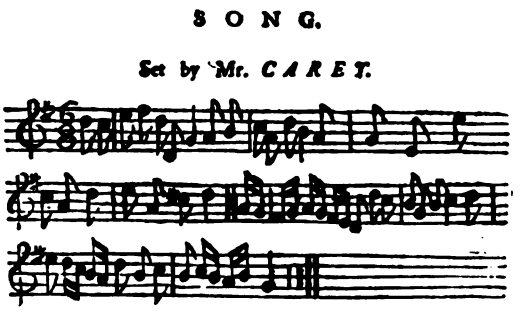
SONG

What Pleasures a Coffee-House daily bestows!
To read and hear how the World merrily goes;
To laugh, sing and prattle of This, That, and T' other;
And be flatter'd and ogl'd and kiss'd too, like Mother.

Here the Rake, after Roving and Tipling all Night,
For his Groat in the Morning may set his Head right,
And the Beau, who ne'er fouls his White fingers with Brass,
May have his Sixpen' worth of—Stare in the Glass.

The Doctor, who'd always be ready to kill,
May ev'ry Day here take his Stand, if he will;
And the soldier, who'd bluster and challenge secure,
May draw boldly here, for—we'll hold him he's sure.

The Lawyer, who's always in quest of his Prey,
May find fools here to feed upon every Day;


SONG.
Set by Mr. CARET.
What Pleasures a Coffee-House daily beſtows!
To read and hear how the World merrily goes;
To laugh, ſing, and prattle of This, That, and T'other;
And be flatter'd, and ogl'd, and kiſs'd too, like Mother.
Here

SONG FROM "THE COFFEE HOUSE"

And the sage Politician, in Coffee-Grounds known,
May point out the Fate of each Crown but—his own.

Then, Gallants, since ev'rything here you may find
That pleasures the Fancy or profits the Mind,
Come all, and take each a full Dish of Delight,
And crowd up our Coffee-House every night.

John Timbs tells us this play "met with great opposition on its representation, owing to its being stated that the characters were intended for a particular family (that of Mrs. Yarrow and her daughter) who kept Dick's, the coffee-house which the artist had inadvertently selected as the frontispiece. It appears," Timbs continues, "that the landlady and her daughter were the reigning toast of the Templars, who then frequented Dick's; and took the matter up so strongly that they united to condemn the farce on the night of its production; they succeeded, and even extended their resentment to everything suspected to be this author's (the Rev. James Miller) for a considerable time after."

Carlo Goldoni, who has been called the Molière of Italy, wrote *La Bottega di Caffè*, (The Coffee House), a naturalistic comedy of bourgeois Venice, satirizing scandal and gambling, in 1750. The scene is a Venetian coffee house (probably Florian's), where several actions take place simultaneously. Among several remarkable studies is one of a prattling slanderer, Don Marzio, which ranks as one of the finest bits of original character drawing the stage has ever seen. The play was produced in English by the Chicago Theatre Society in

1912. Chatfield-Taylor[4] thinks Voltaire probably imitated *La Bottega di Caffè* in his *Le Café, ou l'Ecossaise.* Goldoni was a lover of coffee, a regular frequenter of the coffee houses of his time, from which he drew much in the way of inspiration. Pietro Longhi, called the Venetian Hogarth, in one of his pictures presenting life and manners in Venice during the years of her decadence, shows Goldoni as a visitor in a café of the period, with a female mendicant soliciting alms. It is in the collection of Professor Italico Brass.

Goldoni, in the comedy *The Persian Wife,* gives us a glimpse of coffee making in the middle of the eighteenth century. He puts these words into the mouth of Curcuma, the slave:

Here is the coffee, ladies, coffee native of Arabia,
And carried by the caravans into Ispahan.
The coffee of Arabia is certainly always the best.
While putting forth its leaves on one side, upon the other the flowers appear;
Born of a rich soil, it wishes shade, or but little sun.
Planted every three years is this little tree in the surface of the soil.
The fruit, though truly very small,
Should yet grow large enough to become somewhat green.
Later, when used, it should be freshly ground,
Kept in a warm and dry place and jealously guarded.

* * *

But a small quantity is needed to prepare it.
Put in the desired quantity and do not spill it over the fire:
Heat it till the foam rises, then let it subside again away from the fire;
Do this seven times at least, and coffee is made in a moment.

In 1760 there appeared in France *Le Café, ou l'Ecossaise, comedie,* which purported to have been written by a Mr. Hume, an Englishman, and to have been translated into French. It was in reality the work of Voltaire, who had brought out another play, *Socrates,* in the same manner a short time before. *Le Café,* was translated into English the same year under the title *The Coffee House, or Fair Fugitive.* The title page says the play is written by "Mr. Voltaire" and translated from the French. It is a comedy in five acts. The principal characters are: Fabrice, a good-natured man and the keeper of the coffee house; Constantia, the fair fugitive; Sir William Woodville, a gentleman of distinction under misfortune; Belmont, in love with Constantia, a man of fortune and interest; Freeport, a merchant and an epitome of English manners; Scandal, a sharper; and Lady Alton, in love with Belmont.

Il Caffè di Campagna, a play with music by Galuppi, appeared in Italy in 1762.

Another Italian play, a comedy called *La Caffettiéra da Spirito* was produced in 1807.

Hamilton, a play by Mary P. Hamlin and George Arliss, the latter also playing the title rôle, was produced in America by George C. Tyler in 1918. The first-act scene is laid in the Exchange coffee house of Philadelphia, during the period of Washington's first administration. Among the characters introduced in this scene are James Monroe, Count Tallyrand, General Philip Schuyler, and Thomas Jefferson.

The authors very faithfully reproduce the atmosphere of the coffee house of Washington's time. As Tallyrand remarks, "Everybody comes to see everybody at the Exchange Coffee House . . . It is club, restaurant, merchants' exchange, everything."

The Autocrat of the Coffee Stall, a play in one act, by Harold Chapin, was published in New York in 1921.

Coffee and Literature in General

An interesting book might be written on the transformation that tea and coffee have wrought in the tastes of famous literary men. And of the two stimulants, coffee seems to have furnished greater refreshment and inspiration to most. However, both beverages have made civilization their debtor in that they weaned so many fine minds from the heavy wines and spirits in which they once indulged.

Voltaire and Balzac were the most ardent devotees of coffee among the French *literati.* Sir James Mackintosh (1765-1832), the Scottish philosopher and statesman, was so fond of coffee that he used to assert that the powers of a man's mind would generally be found to be proportional to the quantity of that stimulant which he drank. His brilliant schoolmate and friend, Robert Hall (1764-1831), the Baptist minister and pulpit orator, preferred tea, of which he sometimes drank a dozen cups.

[4] Chatfield-Taylor, H. C. *Goldoni.* New York, 1913 (p. 607).

Cowper; Parson and Parr, the famous Greek scholars; Dr. Samuel Johnson; and William Hazlitt, the writer and critic, were great tea drinkers; but Burton, Dean Swift, Addison, Steele, Leigh Hunt, and many others, celebrated coffee.

Dr. Charles B. Reed, professor in the medical school of Northwestern University, says that coffee may be considered as a type of substance that fosters genius. History seems to bear him out. Coffee's essential qualities are so well defined, says Dr. Reed, that one critic has claimed the ability to trace throughout the works of Voltaire those portions that came from coffee's inspiration. Tea and coffee promote a harmony of the creative faculties that permits the mental concentration necessary to produce the masterpieces of art and literature.

Voltaire (1694 - 1778) the king of wits, was also king of coffee drinkers. Even in his old age he was said to have consumed fifty cups daily. To the abstemious Balzac (1799 - 1850) coffee was both food and drink.

In Frederick Lawton's *Balzac* we read: "Balzac worked hard. His habit was to go to bed at six in the evening, sleep till twelve, and, after, to rise and write for nearly twelve hours at a stretch, imbibing coffee as a stimulant through these spells of composition."

In his *Treatise on Modern Stimulants,* Balzac thus describes his reaction to his most beloved stimulant:

This coffee falls into your stomach, and straightway there is a general commotion. Ideas begin to move like the battalions of the Grand Army on the battlefield, and the battle takes place. Things remembered arrive at full gallop, ensign to the wind. The light cavalry of comparisons deliver a magnificent deploying charge, the artillery of logic hurry up with their train and ammunition, the shafts of wit start up like sharpshooters. Similes arise, the paper is covered with ink; for the struggle commences and is concluded with torrents of black water, just as a battle with powder.

When Balzac tells how Doctor Minoret, Ursule Minoret's guardian, used to regale his friends with a cup of "Moka," mixed with Bourbon and Martinique, which the Doctor insisted on personally preparing in a silver coffee pot, it is his own custom that he is detailing. His Bourbon he bought only in the rue Mont Blanc (now the chaussé d'Antin); the Martinique, in the rue des Vielles Audriettes; the Mocha, at a grocer's in the rue de l'Université. It was half a day's journey to fetch them.

There have been notable contributions to the general literature of coffee by French, Italian, English, and American writers. Space does not permit of more than passing mention of some of them.

The re-actions of the early French and English writers have been touched upon in the chapters on the coffee houses of old London and the early Parisian coffee houses, and in the history chapters dealing with the evolution of coffee drinking and coffee manners and customs.

After Dufour, Galland, and La Roque in France, there were Count Rumford, John Timbs, Douglas Ellis, and Robinson in England; Jardin and Franklin in France; Belli in Italy; Hewitt, Thurber, and Walsh in America.

Mention has been made of coffee references in the works of Aubrey, Burton, Addison, Steele, Bacon, and D'Israeli.

Brillat-Savarin (1755 - 1826) the great French epicure, knew coffee as few men before him or since. In his historical elegy, contained in *Gastronomy as a Fine Art, or the Science of Good Living,* he exclaims:

You crossed and mitred abbots and bishops who dispensed the favors of Heaven, and you the dreaded templars who armed yourselves for the extermination of the Saracens, you knew nothing of the sweet restoring influence of our modern chocolate, nor of the thought-inspiring bean of Arabia—how I pity you!

O. de Gourcuff's *De la Café, épître attribué à Senecé,* is deserving of honorable mention.

An early French writer pays this tribute to the inspirational effects of coffee:

It is a beverage eminently agreeable, inspiring and wholesome. It is at once a stimulant, a cephalic, a febrifuge, a digestive, and an antisoporific; it chases away sleep, which is the enemy of labor; it invokes the imagination, without which there can be no happy inspiration. It expels the gout, that enemy of pleasure, although to pleasure gout owes its birth; it facilitates digestion, without which there can be no true happiness. It disposes to gaiety, without which there is neither pleasure nor enjoyment; it gives wit to those who already have it, and it even provides wit (for some hours at least) to those who usually have it not. Thank heaven for Coffee, for see how many blessings are concentrated in the infusion of a small berry. What other beverage in the world can compare with it? Coffee, at once a pleasure and a medicine; Coffee, which nourishes at the same moment the mind, body

and imagination. Hail to thee! Inspirer of men of letters, best digestive of the gourmand. Nectar of all men.

In Bologna, 1691, Angelo Rambaldi published *Ambrosia arabica, caffè discorso.* This work is divided into eighteen sections, and describes the origin, cultivation, and roasting of the bean, as well as telling how to prepare the beverage.

During the time that Milan was under Spanish rule, Cesare Beccaria directed and edited a publication entitled *Il Caffè,* which was published from June 4, 1764, to May, 1766, "edited in Brescia by Giammaria Rizzardi and undertaken by a little society of friends," according to the salutatory. Besides the Marchese Beccaria, other editors and contributors were Pietro and Alexander Verri, Baillon, Visconti, Colpani, Longhi, Albertenghi, Frisi, and Secchi. The same periodical, with the same editorial staff, was published also in Venice in the Typografia Pizzolato.

Another publication called *Il Caffè,* devoted to arts, letters, and science, was published in Venice in 1850 - 52. Still another, having the same name, a national weekly journal, was published in Milan, 1884 - 89.

An almanac, having the title *Il Caffè,* was published in Milan in 1829.

A weekly paper, called *Il Caffè Pedrocchi,* was published in Padua in 1846 - 48. It was devoted to art, literature and politics.

A publication called *Coffee and Surrogates* (tea, chocolate, saffron, pepper, and other stimulants) was founded by Professor Pietro Polli, in Milan, in 1885; but was short-lived.

An early English magazine (1731) contains an account of divination by coffee-grounds. The writer pays an unexpected visit, and "surprised the lady and her company in close cabal over their coffee, the interest very intent upon one whom, by her address and intelligence, he guessed was a tire woman, to which she added the secret of divining by coffee grounds. She was then in full inspiration, and with much solemnity observing the atoms around the cup; on the one hand sat a widow, on the other a maiden lady. They assured me that every cast of the cup is a picture of all one's life to come, and every transaction and circumstance is delineated with the exactest certainty."

The advertisement used by this seer is quite interesting:

An advise is hereby given that there has lately arrived in this city (Dublin) the famous Mrs. Cherry, the only gentlewoman truly learned in the occult science of *tossing of coffee grounds*; who has with uninterrupted success for some time past practiced to the general satisfaction of her female visitants. Her hours are after prayers are done at St. Peter's Church, until dinner.

(N. B. She never requires more than 1 oz. of coffee from a single gentlewoman, and so proportioned for a second or third person, but not to exceed that number at any one time.)

If the one ounce of coffee represented her payment for reading the future, the charge could not be considered exorbitant!

English writers of the seventeenth and eighteenth centuries were noticeably affected by coffee, and the coffee-houses of the times have been immortalized by them; and in many instances they themselves were immortalized by the coffee houses and their frequenters. In the chapters already referred to and at the close of this chapter, will be found stories, quips, and anecdotes, in which occur many names that are now famous in art and literature.

Modern journalism dates from the publication, April 12, 1709, of the *Tatler,* whose editor was Sir Richard Steele (1672 - 1729) the Irish dramatist and essayist. He received his inspiration from the coffee houses; and his readers were the men that knew them best. In the first issue he announced:

All accounts of gallantry, pleasure and entertainment shall be under the article of White's Coffee House; poetry under that of Will's Coffee House; learning under the title of Grecian; foreign and domestic news you will have from St. James's Coffee House, and what else I shall on any other subject offer shall be dated from my own apartment.

Steele's *Tatler* was issued three times weekly until 1711, when it suspended to be succeeded by the *Spectator,* whose principal contributor was Joseph Addison (1672 - 1719), the essayist and poet, and Steele's school-fellow.

Sir Richard Steele immortalized the Don and Don Saltero's coffee house in old Chelsea in No. 34 of the *Tatler,* wherein he tells us of the necessity of traveling to know the world, by his journey for fresh air, no farther than the village of Chelsea, of which he fancied that he could give an immediate

description — from the five fields, where the the robbers lie in wait, to the coffee house, where the literati sit in council. But he found, even in a place so near town as this, that there were enormities and persons of eminence, whom he before knew nothing of.

The coffee house was almost absorbed by the museum, Steele says:

When I came into the coffee-house, I had not time to salute the company, before my eyes were diverted by ten thousand gimcracks round the room, and on the ceiling. When my first astonishment was over, comes to me a sage of thin and meagre countenance, which aspect made me doubt whether reading or fretting had made it so philosophic; but I very soon perceived him to be that sort which the ancients call "gingivistee", in our language "tooth-drawers". I immediately had a respect for the man; for these practical philosophers go upon a very practical hypothesis, not to cure, but to take away the part affected. My love of mankind made me very benevolent to Mr. Salter, for such is the name of this eminent barber and antiquary.

The Don was famous for his punch, and for his skill on the fiddle. He drew teeth also, and wrote verses; he described his museum in several stanzas, one of which is:

Monsters of all sorts are seen:
Strange things in nature as they grew so;
Some relicks of the Sheba Queen,
And fragments of the fam'd Bob Crusoe.

Steele then plunges into a deep thought why barbers should go farther in hitting the ridiculous than any other set of men; and maintains that Don Saltero is descended in a right line, not from John Tradescant, as he himself asserts, but from the memorable companion of the Knight of Mancha. Steele certifies to all the worthy citizens who travel to see the Don's rarities, that his double-barreled pistols, targets, coats of mail, his sclopeta (hand-culverin) and sword of Toledo, were left to his ancestor by the said Don Quixote; and by his ancestor to all his progeny down to Saltero. Though Steele thus goes far in favor of Don Saltero's great merit, he objects to his imposing several names (without his license) on the collection he has made, to the abuse of the good people of England; one of which is particularly calculated to deceive religious persons, to the great scandal of the well-disposed and may introduce heterodox opinions. (Among the curiosities presented by Admiral Munden was a coffin, containing the body or relics of a Spanish saint, who had wrought miracles.) Says Steele:

He shows you a straw hat, which I know to be made by Madge Peskad, within three miles of Bedford; and tells you "It is Pontius Pilate's wife's chambermaid's sister's hat." To my knowledge of this very hat, it may be added that the covering of straw was never used among the Jews, since it was demanded of them to make bricks without it. Therefore, this is nothing but, under the specious pretense of learning and antiquities, to impose upon the world. There are other things which I can not tolerate among his rarities, as, the china figure of the lady in the glass-case; the Italian engine, for the imprisonment of those who go abroad with it; both of which I hereby order to be taken down, or else he may expect to have his letters patent for making punch superseded, be debarred wearing his muff next winter, or ever coming to London without his wife.

Babillard says that Salter had an old grey muff, and that, by wearing it up to his nose, he was distinguishable at the distance of a quarter of a mile. His wife was none of the best, being much addicted to scolding; and Salter, who liked his glass, if he could make a trip to London by himself, was in no haste to return.

Don Saltero's proved very attractive as an exhibition, and drew crowds to the coffee house. A catalog was published of which were printed more than forty editions. Smollett, the novelist, was among the donors. The catalog, in 1760, comprehended the following rarities:

Tigers' tusks; the Pope's candle; the skeleton of a Guinea-pig; a fly-cap monkey, a piece of the true Cross; the Four Evangelists' heads cut out on a cherry stone; the King of Morocco's tobacco-pipe; Mary Queen of Scots' pincushion; Queen Elizabeth's prayer-book; a pair of Nun's stockings; Job's ears, which grew on a tree; a frog in a tobacco stopper; and five hundred more odd relics!

The Don had a rival, as appears by *A Catalogue of the Rarities to be seen at Adam's, at the Royal Swan, in Kingsland-road, leading from Shoreditch Church, 1756.* Mr. Adams exhibited, for the entertainment of the curious:

Miss Jenny Cameron's shoes; Adam's eldest daughter's hat; the heart of the famous Bess Adams, that was hanged at Tyburn with Lawyer Carr, January 18, 1736-37; Sir Walter Raleigh's tobacco pipe; Vicar of Bray's clogs; engine to shell green peas with; teeth that grew in a fish's belly; Black Jack's ribs; the very comb that Abraham combed his son Isaac and Jacob's head with; Wat Tyler's spurs; rope

that cured Captain Lowry of the head-ach, ear-ach, tooth-ach, and belly-ach; Adam's key of the fore and back door of the Garden of Eden, etc., etc.

These are only a few out of five hundred other equally marvellous exhibits.

The success of Don Saltero in attracting visitors to his coffee house, induced the proprietor of the Chelsea bunhouse to make a similar collection of rarities, to attract customers for his buns; and to some extent it was successful.

In the first number of the *Spectator*, Addison says:

There is no place of general resort wherein I do not often make my appearance. Sometimes I am seen thrusting my head into a round of politicians at Will's, and listening with great attention to the narratives that are made in those little circular audiences. Sometimes I smoke a pipe at Child's, and while I seem attentive to nothing but the *Postman*, overhear the conversation of every table in the room. I appear on Sunday nights at St. James' coffee house, and *sometimes* join the little committee of politics in the inner room as one who comes there to hear and improve. My face is likewise very well known at the Grecian, the Cocoa Tree, and in the theatres both of Drury Lane and the Hay Market. I have been taken for a merchant upon the Exchange for above these ten years, and sometimes pass for a Jew in the assembly of stock jobbers at Jonathan's; in short, wherever I see a cluster of people, I always mix with them, though I never open my lips, but in my own club.

In the second number he tells that:

I am now settled with a widow woman, who has a great many children and complies with my humor in everything. I do not remember that we have exchanged a word together for these five years; my coffee comes into my chamber every morning without asking for it, if I want fire I point to the chimney, if water, to my basin; upon which my landlady nods as much as to say she takes my meaning, and immediately obeys my signals.

Three of Addison's papers in the *Spectator* (Nos. 402, 481, and 568) are humorously descriptive of the coffee houses of the period. No. 403 opens with the remark that:

The courts of two countries do not so much differ from one another, as the Court and the City, in their peculiar ways of life and conversation. In short, the inhabitants of St. James, notwithstanding they live under the same laws, and speak the same language, are a distinct people from those of Cheapside, who are likewise removed from those of the Temple on the one side, and those of Smithfield on the other, by several climates and degrees in their way of thinking and conversing together.

For this reason, the author takes a ramble through London and Westminster, to gather the opinions of his ingenious countrymen upon a current report of the king of France's death.

I know the faces of all the principal politicians within the bills of mortality; and as every coffee-house has some particular statesman belonging to it, who is the mouth of the street where he lives, I always take care to place myself near him, in order to know his judgment on the present posture of affairs. And, as I foresaw the above report would produce a new face of things in Europe, and many curious speculations in our British coffee-houses, I was very desirous to learn the thoughts of our most eminent politicians on that occasion.

That I might begin as near the fountain-head as possible, I first of all called in at St. James's, where I found the whole outward room in a buzz of politics; the speculations were but very indifferent towards the door, but grew finer as you advanced to the upper end of the room, and were so much improved by a knot of theorists, who sat in the inner room, within the steams of the coffee-pot, that I there heard the whole Spanish monarchy disposed of, and all the line of Bourbons provided for in less than a quarter of an hour.

I afterwards called in at Giles's, where I saw a board of French gentlemen sitting upon the life and death of their grand monarque. Those among them who had espoused the Whig interest very positively affirmed that he had departed this life about a week since, and therefore, proceeded without any further delay to the release of their friends in the galleys, and to their own re-establishment; but, finding they could not agree among themselves, I proceeded on my intended progress.

Upon my arival at Jenny Man's I saw an alert young fellow that cocked his hat upon a friend of his, who entered just at the same time with myself, and accosted him after the following manner: "Well, Jack, the old prig is dead at last. Sharp's the word. Now or never, boy. Up to the walls of Paris, directly;" with several other deep reflections of the same nature.

I met with very little variation in the politics between Charing Cross and Covent Garden. And, upon my going into Will's, I found their discourse was gone off, from the death of the French King, to that of Monsieur Boileau, Racine, Corneille, and several other poets, whom they regretted on this occasion as persons who would have obliged the world with very noble elegies on the death of so great a prince, and so eminent a patron of learning.

At a coffee-house near the Temple, I found a couple of young gentlemen engaged very smartly in a dispute on the succession to the Spanish monarchy. One of them seemed to have been retained as advocate for the Duke of Anjou, the other for his Imperial Majesty. They were both for regarding the title to that kingdom by the statute laws of England; but finding them

going out of my depth, I pressed forward to Paul's Churchyard, where I listened with great attention to a learned man, who gave the company an account of the deplorable state of France during the minority of the deceased king.

I then turned on my right hand into Fish-street, where the chief politician of that quarter, upon hearing the news, (after having taken a pipe of tobacco, and ruminated for some time) "If,' says he, "the King of France is certainly dead, we shall have plenty of mackerel this season: our fishery will not be disturbed by privateers, as it has been for these ten years past." He afterwards considered how the death of this great man would affect our pilchards, and by several other remarks infused a general joy into his whole audience.

I afterwards entered a by-coffee-house that stood at the upper end of a narrow lane, where I met with a Nonjuror engaged very warmly with a laceman who was the great support of a neighboring conventicle. The matter in debate was whether the late French King was most like Augustus Caesar, or Nero. The controversy was carried on with great heat on both sides, and as each of them looked upon me very frequently during the course of their debate, I was under some apprehension that they would appeal to me, and therefore laid down my penny at the bar and made the best of my way to Cheapside.

I here gazed upon the signs for some time before I found one to my purpose. The first object I met in the coffee-room was a person who expressed a great grief for the death of the French King; but upon his explaining himself, I found his sorrow did not arise from the loss of the monarch, but for his having sold out of the Bank about three days before he heard the news of it. Upon which a haberdasher, who was the oracle of the coffee-house, and had his circle of admirers about him, called several to witness that he had declared his opinion, above a week before, that the French King was certainly dead; to which he added, that considering the late advices we had received from France, it was impossible that it could be otherwise. As he was laying these together, and debating to his hearers with great authority, there came a gentlemen from Garraway's, who told us that there were several letters from France just come in, with advice that the King was in good health, and was gone out a hunting the very morning the post came away; upon which the haberdasher stole off his hat that hung upon a wooden peg by him, and retired to his shop with great confusion. This intelligence put a stop to my travels, which I had prosecuted with so much satisfaction; not being a little pleased to hear so many different opinions upon so great an event, and to observe how naturally, upon such a piece of news, every one is apt to consider it to his particular interest and advantage.

Johnson wrote in his *Life of Addison* concerning the *Tatler* and the *Spectator* that they were:

Published at a time when two parties, loud, restless and violent, each with plausible declarations, and both perhaps without any distinct determination of its views, were agitating the nation; to minds heated with political contest they supplied cooler and more inoffensive reflections. . . . They had a perceptible influence on the conversation of the time, and taught the frolic and the gay to unite merriment with decency, effects which they can never wholly lose.

Harold Routh in the Cambridge *History of Literature,* speaking of the *Spectator,* says:

It surpassed the *Tatler* in style and in thought. It gave expression to the *power* of commerce. For more than a century traders had been characterized as dishonest and avaricious, because playwrights and pamphleteers generally wrote for the leisure classes, and were themselves too poor to have any but unpleasant relations with men of business. Now merchants were becoming ambassadors of civilization, and had developed intellect so as to control distant and, as it seemed, mysterious sources of wealth; by a stroke of the pen and largely through the coffee houses they had come to know their own importance and power.

Samuel Pepys (1633 - 1703) was very fond of good eating, and almost daily entries were made in his *Diary* of dinner delicacies that he had enjoyed. One dinner, that he considered a great success, was served to eight persons, and consisted of oysters, a hash of rabbits, a lamb, a rare chine of beef; next a great dish of roasting fowl ("cost me about 30 s.") a tart, then fruit and cheese. "My dinner was noble enough . . . I believe this day's feast will cost me near 5 pounds." But it will be noted that coffee was not mentioned as a part of the menu.

He makes countless references to visits paid to this and that coffee house, but records only one instance of actually drinking coffee:

Up betimes to my office, and thence at seven o'clock to Sir G. Carteret, and there with Sir J. Minnes made an end of his accounts, but staid not to dinner my Lady having made us drink our morning draft there of several wines, but I drank nothing but some of her coffee, which was poorly made, with a little sugar in it.

This note which he considered worthy of record was certainly not inspired by the excellence of the good lady's matutinal coffee.

William Cobbett (1762 - 1835) the English-American politician, reformer, and writer on economics, denounced coffee as

"slops"; but he was one of a remarkably small minority. Before his day, one of England's greatest satirists, Dean Swift, (1667-1745) led a long roll of literary men who were devotees of coffee.

Swift's writings are full of references to coffee; and his letters from Stella came to him under cover, at the St. James coffee house. There is scarcely a letter to Esther (Vanessa) Vanhomrigh which does not contain a significant reference to coffee, by which the course of their friendship and clandestine meetings may be traced. In one dated August 13, 1720, written while traveling from place to place in Ireland, he says:

We live here in a very dull town, every valuable creature absent, and Cad says he is weary of it, and would rather prefer his coffee on the barrenest mountain in Wales than be king here.

A fig for partridges and quails,
Ye dainties I know nothing of ye;
But on the highest mount in Wales,
Would choose in peace to drink my coffee.

In another letter, about two years later, replying to one in which Vanessa has reproached him and begged him to write her soon, he advises:

The best maxim I know in life, is to drink your coffee when you can, and when you cannot, to be easy without it; while you continue to be splenetic, count upon it I will always preach. Thus much I sympathize with you, that I am not cheerful enough to write, for, I believe, coffee once a week is necessary, and you know very well that coffee makes us severe, and grave, and philosophical.

These various references to coffee are thought to have been based upon an incident in the early days of their friendship, when on the occasion of the Vanhomrigh family journeying from Dublin to London, Vanessa accidentally spilt her coffee in the chimney-place at a certain inn, which Swift considered a premonition of their growing friendship. Writing from Clogher, Swift reminds Vanessa:

Remember that riches are nine parts in ten of all that is good in life, and health is the tenth—drinking coffee comes long after, and yet it is the eleventh, but without the two former you cannot drink it right.

In another letter he writes facetiously, in memory of her playful badinage:

I long to drink a dish of coffee in the sluttery and hear you dun me for a secret, and "Drink your coffee; why don't you drink your coffee?"

Leigh Hunt had very pleasant things to say about coffee, giving to it the charm of appeal to the imagination, which he said one never finds in tea. For example:

Coffee, like tea, used to form a refreshment by itself, some hours after dinner; it is now taken as a digester, right upon that meal or the wine, and sometimes does not even close it; or the digester itself is digested by a liquor of some sort called a *Chasse-Café* [coffee-chaser]. We like coffee better than tea for taste, but tea "for a constancy." To be perfect in point of relish (we do not say of wholesomeness) coffee should be strong and hot, with little milk and sugar. It has been drunk after this mode in some parts of Europe, but the public have nowhere, we believe, adopted it. The favorite way of taking it at a meal, abroad, is with a great superfluity of milk—very properly called, in France *café au lait* (coffee *to the* milk). One of the pleasures we receive in drinking coffee is that, being the universal drink in the East, it reminds of that region of the "Arabian Nights" as smoking does for the same reason; though neither of these refreshments, which are identified with Oriental manners, is to be found in that enchanting work. They had not been discovered when it was written; the drink then was sherbet. One can hardly fancy what a Turk or a Persian could have done without coffee and a pipe, any more than the English ladies and gentlemen, before the civil wars, without tea for breakfast.

In his old age, Immanuel Kant, the great metaphysician, became extremely fond of coffee; and Thomas de Quincey relates a little incident showing Kant's great eagerness for the after-dinner cup.

At the beginning of the last year of his life, he fell into a custom of taking, immediately after dinner, a cup of coffee, especially on those days when it happened that I was of his party. And such was the importance that he attached to his little pleasure that he would even make a memorandum beforehand, in the blank paper book that I had given him, that on the next day I was to dine with him, and consequently *"that there was to be coffee."* Sometimes in the interest of conversation, the coffee was forgotten, but not for long. He would remember and with the querulousness of old age and infirm health would demand that coffee be brought "upon the spot." Arrangements had always been made in advance, however; the coffee was ground, and the water was boiling: and in the very moment the word was given, the servant shot in like an arrow and plunged the coffee into the water. All that remained, therefore, was to give it time to boil up. But this trifling delay seemed unendurable to Kant. If it were said, "Dear Professor, the coffee will be brought up in a moment," he would say, *"Will be!* There's the rub, that it only *will* be." Then he would quiet himself with a stoical air, and say, "Well, one can die after all; it is but

dying; and in the next world, thank God, there is no drinking of coffee and consequently no waiting for it."

When at length the servant's steps were heard upon the stairs, he would turn round to us, and joyfully call out: "Land, land! my dear friends, I see land."

Thackeray (1811-1863) must have suffered many tea and coffee disappointments. In the *Kickleburys on the Rhine* he asks: "Why do they always put mud into coffee aboard steamers? Why does the tea generally taste of boiled boots?"

In *Arthur's*, A. Neil Lyons has preserved for all time the atmosphere of the London coffee stall. "I would not," he says, "exchange a night at Arthur's for a week with the brainiest circle in London." The book is a collection of short stories. As already recorded, Harold Chapin dramatized this picturesque London institution in *The Autocrat of the Coffee Stall.*

In General Horace Porter's *Campaigning with Grant,* we have three distinct coffee incidents within fifty-odd pages; or explicitly, see pages 47, 56, 101; where, deep in the fiercest snarls of The Wilderness campaign we are treated to:

General Grant, slowly sipping his coffee . . . a full ration of that soothing army beverage . . The general made rather a singular meal preparatory to so exhausting a day as that which was to follow. He took a cucumber, sliced it, poured some vinegar over it, and partook of nothing else except a cup of strong coffee . . . The general seemed in excellent spirits, and was even inclined to be jocose. He said to me, "We have just had our coffee, and you will find some left for you." . . . I drank it with the relish of a shipwrecked mariner.

One of the first immediate supplies General Sherman desired from Wilmington, on reaching Fayetteville and lines of communication in March, 1865, was, expressly, coffee; does he not say so himself, on page 297 of the second volume of his *Memoirs*?

Still more expressly, towards the close of his *Memoirs,* and among final recommendations, the fruit of his experiences in that whole vast war, General Sherman says this for coffee:

Coffee has become almost indispensable, though many substitutes were found for it, such as Indian corn, roasted, ground and boiled as coffee, the sweet potato, and the seed of the okra plant prepared in the same way. All these were used by the people of the South, who for years could procure no coffee, but I noticed that the women always begged of us real coffee, which seemed to satisfy a natural yearning or craving more powerful than can be accounted for on the theory of habit. Therefore I would always advise that the coffee and sugar ration be carried along, even at the expense of bread, for which there are many substitutes.

George Agnew Chamberlain's novel *Home* contains a vivid description of coffee-making on an old plantation, and could only have been written by a devoted lover of this drink. Gerry Lansing, the American, has escaped drowning in the river, and is now lost in the Brazilian forest. He finds his way at last to an old plantation house:

A stove was built into the masonry, and a cavernous oven gaped from the massive wall. At the stove was an old negress, making coffee with shaky deliberation . . . The girl and the wrinkled old woman made him sit down at the table, and then placed before him crisp rusks of mandioc flour and steaming coffee whose splendid aroma triumphed over the sordidness of the scene and through the nostrils reached the palate with anticipatory touch. It was sweetened with dark, pungent syrup and was served black in a capacious bowl, as though one could not drink too deeply of the elixir of life. Gerry ate ravenously and sipped the coffee, at first sparingly, then greedily . . . Gerry set down the empty bowl with a sigh. The rusks had been delicious. Before the coffee the name of nectar dwindled to impotency. Its elixir rioted in his veins.

In the *Rosary,* Florence L. Barclay has a Scotch woman tell how she makes coffee. She says:

Use a jug—it is not what you make it in; it is how ye make it. It all hangs upon the word fresh—freshly roasted—freshly ground—water freshly boiled. And never touch it with metal. Pop it into an earthenware jug, pour in your boiling water straight upon it, stir it with a wooden spoon, set it on the hob ten minutes to settle; the grounds will all go to the bottom, though you might not think it, and you pour it out, fragrant, strong and clear. But the secret is, *fresh, fresh, fresh,* and don't stint your coffee.

Cyrus Townsend Brady's *The Corner in Coffee* is "a thrilling romance of the New York coffee market."

Coffee, Du Barry, and Louis XV figure in one scene of the story of *The Moat with the Crimson Stains,* as told by Elizabeth W. Champney in her *Romance of the Bourbon Chateaux.*[5] It tells of the German apprentice Riesener, who assisted his master Oeben in designing for Louis XV a beautiful desk with a secret drawer,

[5] Copyright, 1903, by G. P. Putnam's Sons, New York. Used by courtesy of the author and the publisher.

which it took ten years of unremitting industry to execute. At the end, Riesener was to be accepted by his master as a partner and a son-in-law. Little Victoire, who loved to sit in a punt and trail her doll in the waters of the Bievre to see to what color its frock would be changed by the dyes of the Gobelin factory, was then only five, and Madam Oeben twenty-three. As the years rolled by, Riesener grew to love the mother and not the daughter, who, meanwhile, shot up into a slim girl, not of her mother's beauty, but of a loveliness all her own. Then there was a quarrel because the young apprentice thought the master should have resented the suggestion of M. Duplessis that his wife pose in the nude for the statuettes which were to hold the sconces on the king's desk; and Riesener left in a fine youthful frenzy, vowing he would never return while the *maître* lived. The latter, unable to complete the masterpiece which he loved more than anything else on earth, sought death, and perished in the crimson waters of the Bievre.

The *maître* had no enemies, but his quarrel with Riesener caused a fear to spring up in the widow's heart that the apprentice might have been guilty of his murder, so she refused to see him when, hearing of his master's death, he returned, stricken with remorse, to finish the desk. On it were the statuettes modeled in perfect likeness of Mlle. de Vaubernier, a wily little milliner of Riesener's bohemian set who had taken this way to bring herself to the attention of Louis XV. The ruse was successful; and after the acceptance of the desk, there was installed a new *maîtresse en titre*, the notorious Madame Du Barry, erstwhile the pretty milliner, Mlle. de Vaubernier.

Later, Madame Du Barry sent for the now famous *ebeniste* (cabinet maker); and, when her negro page Zamore admitted him, he found His Majesty Louis XV kneeling in front of the fireplace, making coffee for her while she laughed at him for scalding his fingers. He had been summoned to show the king the mechanism of the secret drawer, so cunningly concealed in the king's desk that no one could find it. But Riesener knew not the secret of his master, who had died without revealing it. Then the red revolution came; and when the pretty pavilion at Louveciennes was sacked, and its costly furniture hurled down the cliff to the Seine, the king's desk, shattered almost beyond repair, was carried to the Gobelins' factory and presented to Mme. Oeben in recognition of her husband's workmanship. Then the secret compartment was found to have been disclosed, and Riesener was absolved by a letter therein, from the *maître*, who intimated he was about to end it all because of paralysis. Riesener marries the widow and all ends happily.

James Lane Allen, in *The Kentucky Warbler*, tells a tale of the Blue Grass country and of a young hero who wanders after a bird's note to find romance and the key to his own locked nature. Here is an incident from his first forest adventure:

> There was one tree he curiously looked around for, positive that he should not be blind to it if fortunate enough to set his eyes on one —the coffee tree. That is, he felt sure he'd recognize it if it yielded coffee ready to drink, of which never in his life had they given him enough. Not once throughout his long troubled experience as to being fed had he been allowed as much coffee as he craved. Once, when younger, he had heard some one say that the only tree in all the American forests that bore the name of Kentucky was the Kentucky coffee tree, and he had instantly conceived a desire to pay a visit in secret to that corner of the woods. To take his cup and a few lumps of sugar and sit under the boughs and catch the coffee as it dripped down . . . No one to hold him back . . . as much as he wanted at last . . . The Kentucky coffee tree—his favorite in Nature!

John Kendrick Bangs relates, in *Coffee and Repartee*[6], some amusing skirmishes indulged in at the boarding-house table, between the Idiot and the guests, where coffee served the purpose of enlivening the tilt:

> "Can't I give you another cup of coffee?" asked the landlady of the School Master.
>
> "You may," returned the School Master, pained at the lady's grammar, but too courteous to call attention to it save by the emphasis with which he spoke the word "may".
>
> Said the Idiot: "You may fill my cup too, Mrs. Smithers."
>
> "The coffee is all gone," returned the landlady, with a snap.
>
> "Then, Mary," said the Idiot, gracefully turning to the maid, "you may give me a glass of ice water. It is quite as warm, after all, as the coffee and not quite so weak."

One other little skit remains at the expense of Mrs. Smithers' coffee. At the breakfast table, where the air, as usual, is

[6] Copyright, 1893, by Harper Bros., and 1921, by John Kendrick Bangs. Reprinted by permission.

charged with repartee, Mr. Whitechoker, the minister, says to his landlady:

"Mrs. Smithers, I'll have a dash of hot water in my coffee, this morning. Then with a glance toward the Idiot, he added, "I think it looks like rain."

"Referring to the coffee, Mr. Whitechoker?" queried the Idiot. . . .

"Ah,—I don't quite follow you," replied the Minister with some annoyance.

"You said something looked like rain, and I asked you if the thing referred to was the coffee, for I was disposed to agree with you," said the Idiot.

"I am sure," put in Mrs. Smithers, "that a gentleman of Mr. Whitechoker's refinement would not make any such insinuation, sir. He is not the man to quarrel with what is set before him."

"I must ask your pardon, Madam," returned the Idiot politely. "I hope I am not the man to quarrel with my food, either. Indeed, I make it a rule to avoid unpleasantness of all sorts, particularly with the weak, under which category I find your coffee."

Coffee Quips and Anecdotes

Coffee literature is full of quips and anecdotes. Probably the most famous coffee quip is that of Mme. de Sévigné, who, as already told in chapter XI, was wrongfully credited with saying, "Racine and coffee will pass." It was Voltaire in his preface to *Irene* who thus accused the amiable letter-writer; and she, being dead, could not deny it.

That Mme. de Sévigné was at one time a coffee drinker is apparent from this quotation from one of her letters: "The cavalier believes that coffee gives him warmth, and I at the same time, foolish as you know me, do not take it any longer."

La Roque called the beverage "the King of Perfumes", whose charm was enriched when vanilla was added.

Emile Souvestre (1806 - 1854) said: "Coffee keeps, so to say, the balance between bodily and spiritual nourishment."

Isid Bourdon said: "The discovery of coffee has enlarged the realm of illusion and given more promise to hope."

An old Bourbon proverb says: "To an old man a cup of coffee is like the door post of an old house — it sustains and strengthens him."

Jardin says that in the Antilles, instead of orange blossoms, the brides carry a spray of coffee blossoms; and when a woman remains unmarried, they say she has lost her coffee branch. "We say in France, that she has *coiffé* Sainte-Catherine."

Fontenelle and Voltaire have both been quoted as authors of the famous reply to the remark that coffee was a slow poison: "I think it must be, for I've been drinking it for eighty-five years and am not dead yet."

In Meidinger's *German Grammar* the "slow-poison" *bon mot* is attributed to Fontenelle.

It seems reasonable to give Fontenelle credit for this *bon mot.* Voltaire died at eighty-four. Fontenelle lived to be nearly a hundred years. Of his cheerfulness at an advanced age an anecdote is related. In conversation, one day, a lady a few years younger than Fontenelle playfully remarked, "Monsieur, you and I stay here so long, methinks Death has forgotten us." "Hush! Speak in a whisper, madame," replied Fontenelle, "*tant mieux!* (so much the better!) don't remind him of us."

Flaubert, Hugo, Baudelaire, Paul de Kock, Théophile Gauthier, Alfred de Musset, Zola, Coppée, George Sand, Guy de Maupassant, and Sarah Bernhardt, all have been credited with many clever or witty sallies about coffee.

Prince Talleyrand (1754 - 1839), the French diplomat and wit, has given us the cleverest summing up of the ideal cup of coffee. He said it should be "*Noir comme le diable, chaud comme l'enfer, pur comme un ange, doux comme l'amour.*" Or in English, "black as the devil, hot as hell, pure as an angel, sweet as love."

This quip has been wrongfully attributed to Brillat-Savarin. Talleyrand said also:

A cup of coffee lightly tempered with good milk detracts nothing from your intellect; on the contrary, your stomach is freed by it, and no longer distresses your brain; it will not hamper your mind with troubles, but give freedom to its working. Suave molecules of Mocha stir up your blood, without causing excessive heat; the organ of thought receives from it a feeling of sympathy; work becomes easier, and you will sit down without distress to your principal repast, which will restore your body, and afford you a calm delicious night.

Among coffee drinkers a high place must be given to Prince Bismarck (1815 - 1898). He liked coffee unadulterated. While with the Prussian army in France, he one day entered a country inn and asked the host if he had any chicory in the house. He had. Bismarck said: "Well, bring it to

me; all you have." The man obeyed, and handed Bismarck a canister full of chicory.

"Are you sure this is all you have?" demanded the chancellor.

"Yes, my lord, every grain."

"Then," said Bismarck, keeping the canister by him, "go now and make me a pot of coffee."

This same story has been related of François Paul Jules Grévy (1807-1891), president of France, 1879 - 1887. According to the French story, Grévy never took wine, even at dinner. He was, however, passionately fond of coffee. To be certain of having his favorite beverage of the best quality, he always, when he could, prepared it himself. Once he was invited, with a friend, M. Bethmont, to a hunting party by M. Menier, the celebrated manufacturer of chocolate, at Noisiel. It happened that M. Grévy and M. Bethmont lost themselves in the forest. Trying to find their way out, they stumbled upon a little wine house, and stopped for a rest. They asked for something to drink. M. Bethmont found his wine excellent; but, as usual, Grévy would not drink. He wanted coffee, but he was afraid of the decoction which would be brought him. He got a good cup, however, and this is how he managed it:

"Have you any chicory?" he said to the man.

"Yes, sir."

"Bring me some."

Soon the proprietor returned with a small can of chicory.

"Is that all you have?" asked Grévy.

"We have a little more."

"Bring me the rest."

When he came again, with another can of chicory, Grévy said:

"You have no more?"

"No, sir."

"Very well. Now go and make me a cup of coffee."

As already told, Louis XV had a great passion for coffee, which he made himself. Lenormand, the head gardener at Versailles, raised six pounds of coffee a year which was for the exclusive use of the king. The king's fondness for coffee and for Mme. Du Barry gave rise to a celebrated anecdote of Louveciennes which was accepted as true by many serious writers. It is told in this fashion by Mairobert in a pamphlet scandalizing Du Barry in 1776:

His Majesty loves to make his own coffee and to forsake the cares of the government. One day the coffee pot was on the fire and, his Majesty being occupied with something else, the coffee boiled over. "Oh France, take care! Your coffee *f*—— *le camp!*" cried the beautiful favorite.

Charles Vatel has denied this story.

It is related of Jean Jacques Rousseau that once when he was walking in the Tuileries he caught the aroma of roasting coffee. Turning to his companion, Bernardino de Saint-Pierre, he said, "Ah, that is a perfume in which I delight; when they roast coffee near my house, I hasten to open the door to take in all the aroma." And such was the passion for coffee of this philosopher of Geneva that when he died, "he just missed doing it with a cup of coffee in his hand".

Barthez, confidential physician of Napoleon the first, drank a great deal of it, freely, calling it "the intellectual drink."

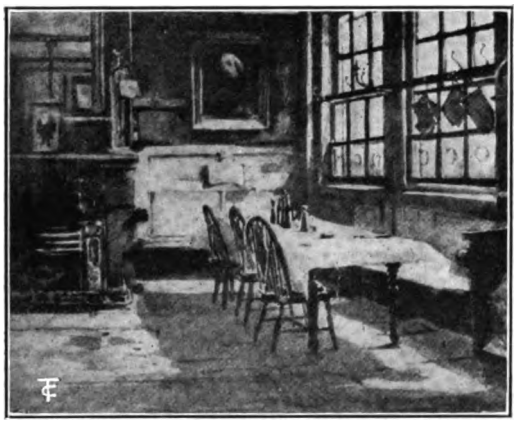
Bonaparte, himself, said: "Strong coffee, and plenty, awakens me. It gives me a warmth, an unusual force, a pain that is not without pleasure. I would rather suffer than be senseless."

Edward R. Emerson[1] tells the following story of the Café Procope. One day while M. Saint-Foix was seated at his usual table in this café an officer of the king's body-guard entered, sat down, and ordered a cup of coffee, with milk and a roll, adding, "It will serve me for a dinner." At this, Saint-Foix remarked aloud that a cup of coffee, with milk and a roll, was a confoundedly poor dinner. The officer remonstrated. Saint-Foix reiterated his remark, adding that nothing he could say to the contrary would convince him that it was *not* a confoundedly poor dinner. Thereupon a challenge was given and accepted, and the whole company present adjourned as spectators to a duel which ended by Saint-Foix receiving a wound in the arm.

"That is all very well," said the wounded combatant; "but I call you to witness, gentlemen, that I am still profoundly convinced that a cup of coffee, with milk and a roll, is a confoundedly poor dinner."

At this moment the principals were arrested and carried before the Duke de

[1] *Beverages Past and Present*, New York, copyright 1908. By courtesy of G. P. Putnam's, Sons, Publishers.



DR. JOHNSON'S SEAT AT THE CHESHIRE CHEESE

Noailles, in whose presence Saint-Foix, without waiting to be questioned, said:

"Monseigneur, I had not the slightest intention of offending this gallant officer who, I doubt not, is an honorable man; but your excellency can never prevent my asserting that a cup of coffee, with milk and a roll, is a confoundedly poor dinner."

"Why, so it is," said the Duke.

"Then I am not in the wrong," persisted Saint-Foix; "and a cup of coffee"—at these words magistrates, delinquents, and auditory burst into a roar of laughter, and the antagonists forthwith became warm friends.

Boswell in his *Life of Johnson* tells a story of an old chevalier de Malte, of *ancienne noblesse,* but in low circumstances, who was in a coffee house in Paris, where was also "Julien, the great manufacturer at Gobelins, of fine tapestry, so much distinguished for the figures and the colours. The chevalier's carriage was very old. Says Julien with a plebeian insolence, 'I think, sir, you had better have your carriage new painted.'

"The chevalier looked at him with indignant contempt, and answered:

" 'Well, sir, you may take it home and dye it.'

"All the coffee house rejoiced at Julien's confusion."

Sydney Smith (1771-1845) the English clergyman and humorist, once said: "If you want to improve your understanding, drink coffee; it is the intellectual beverage."

Our own William Dean Howells pays the beverage this tribute: "This coffee intoxicates without exciting, soothes you softly out of dull sobriety, making you think and talk of all the pleasant things that ever happened to you."

The wife of the president of the United States prefers coffee to tea. Afternoon guests at the White House may be refreshed, if they choose, by a sip of tea. But while tea is on tap for callers, Mrs. Harding always has coffee for those who, like herself, prefer it.

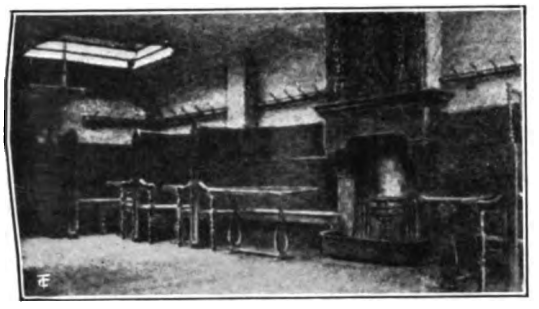
Old London Coffee-House Anecdotes

A good-sized volume might be compiled of the many anecdotes that have been written about habitués of the London coffee houses of the seventeenth and eighteenth centuries.

Dr. Samuel Johnson (1709-1784), the lexicographer, was one of the most constant frequenters of the coffee houses of his day. His big, awkward figure was a familiar sight as he went about attended by his satellite, young James Boswell, who was to write about him for the delight of future generations in his marvelous *Life of Johnson.* The intellectual and moral peculiarities of the man found a natural expression in the coffee house. Johnson was fifty-four and Boswell only twenty-three when the two first met in Tom Davies' book-shop in Covent Garden. The story is told by Boswell with great particularity and characteristic naiveté:

> Mr. Davies mentioned my name, and respectfully introduced me to him. I was much agitated, and recollecting his prejudice against the Scotch, of which I had heard so much, I said to Davies, "Don't tell him where I come from." "From Scotland," cried Davies roguishly. "Mr. Johnson," said I, "I do indeed come from Scotland, but I cannot help it." I am willing to flatter myself that I meant this as a light pleasantry to sooth and conciliate him, and not as a humiliating abasement at the expense of my country. But however that might be, this speech was somewhat unlucky, for with that quickness of wit for which he was so remarkable, he seized the expression, "come from Scotland!" which I used in the sense of being of that country; and, as if I had come away from it, or left it, he retorted, "That, sir, I find is what a great many of your countrymen cannot help."

Nothing daunted, however, Boswell within a week called upon Johnson in his chambers. This time the doctor urged him to tarry. Three weeks later he said to him, "Come to me as often as you can." With-



ORIGINAL COFFEE ROOM, OLD COCK TAVERN

in a fortnight thereafter Boswell was giving the great man a sketch of his own life and Johnson was exclaiming, "Give me your hand; I have taken a liking to you."

When people began to ask, "Who is this Scotch cur at Johnson's heels?" Goldsmith replied: "He is not a cur; he is only a bur. Tom Davies flung him at Johnson in sport, and he has the faculty of sticking."

Thus began one of the strangest friendships, out of which developed the most delightful biography in all literature. Boswell's taste for literary adventures, and Johnson's literary vagrancy met in a companionship that found much satisfaction in the bohemianism of the inns and coffee houses of old London. Boswell thus describes the eccentric doctor's outlook on this mode of living:

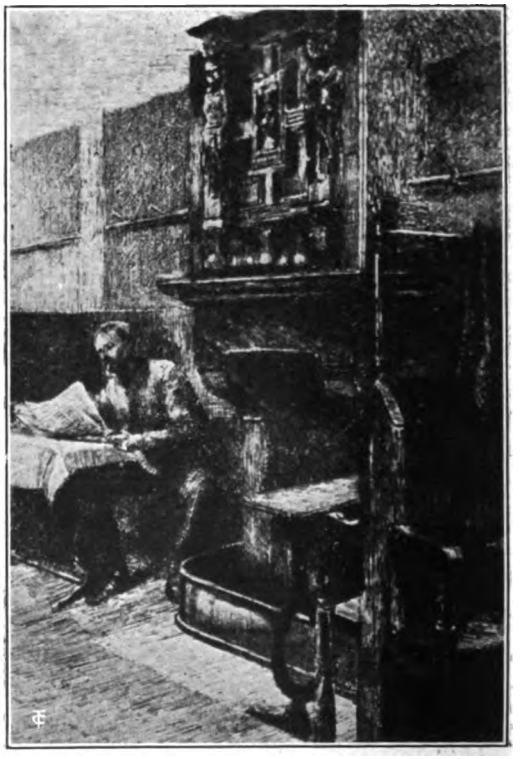
We dined today at an excellent inn at Chapel-House, where Mr. Johnson commented on English coffee houses and inns remarking that the English triumphed over the French in one respect, in that the French had no perfection of tavern life. There is no private house, (said he) in which people can enjoy themselves so well, as at a capital tavern. Let there be ever so great plenty of good things, ever so much grandeur, ever so much elegance, ever so much desire that everybody should be easy; in the nature of things it cannot be: there must always be some degree of care and anxiety. The master of the house is anxious to entertain his guests; the guests are anxious to be agreeable to him; and no man, but a very impudent dog indeed, can as freely command what is in another man's house, as if it were his own. Whereas, at a tavern, there is a general freedom from anxiety. You are sure you are welcome: and the more noise you make, the more trouble you give, the more good things you call for, the welcomer you are. No servants will attend you with the alacrity which waiters do, who are incited by the prospect of an immediate reward in proportion as they please. No, Sir, there is nothing which has yet been contrived by man, by which so much happiness is produced as by a good tavern or inn. He then repeated, with great emotion, Shenstone's lines:

"Whoe'er has travell'd life's dull round,
Where'er his stages may have been,
May sigh to think he still has found
His warmest welcome at an inn."

Patient delving into Johnsoniana is rewarded with many anecdotes about the mad doctor philosopher and his faithful reporter who delighted in translating his genius to the world.

Boswell was a wine-bibber, but Johnson confessed to being "a hardened and shameless tea drinker." When Boswell twigged him for abstaining from the stronger drink, the doctor replied: "Sir, I have no objection to a man's drinking wine if he can do it in moderation. I find myself apt to go to excess in it and therefore, after having been for some time without it, on account of illness, I thought it better not to return to it."

Another time he said of tea: "What a delightful beverage must that be that pleases all palates at a time when they can take nothing else at breakfast."



FIREPLACE IN THE COFFEE ROOM OF THE OLD COCK TAVERN

MORNING GOSSIP IN THE COFFEE ROOM OF THE OLD COCK TAVERN

In his early days Johnson had David Garrick as an unwilling pupil. After the actor had become famous and his prosperity had turned his head, he was wont to "put the table in a roar" by mimicking the doctor's grimaces. There is a story that on the occasion of a certain dinner party where both were guests, Garrick indulged in a coarse jest on the great man's table manners. After the merriment had subsided, Doctor Johnson arose solemnly and said:

"Gentlemen, you must doubtless suppose from the extreme familiarity with which Mr. Garrick has thought fit to treat me that I am an acquaintance of his; but I can assure you that until I met him here, I never saw him but once before — and then I paid five shillings for the sight."

A certain sycophant, thinking to curry favor with Johnson, took to laughing loud and long at everything he said. Johnson's patience at last became exhausted, and after a particularly objectionable outburst, he turned upon the boor with:

"Pray sir, what is the matter? I hope I have not said anything which you can comprehend!"

Because of his physical and mental disabilities Dr. Johnson was not a good social animal. Nevertheless, when it pleased his humor, he could be the cavalier, for his mind overcame every impediment.

It is related of him that once when a lady who was showing him around her garden expressed her regret at being unable to bring a particular flower to perfection, he arose gallantly to the occasion by taking her hand and remarking:

"Then, madam, permit me to bring perfection to the flower!"

Again, when Mrs. Siddons, the great English tragedienne, called upon him in his chambers and the servant did not promptly bring her a chair, his quick wit made capital of the incident by the remark:

"You see, madam, wherever you go there are no seats to be had!"

John Thomas Smith in his *Antiquarian Rambles in the Streets of London* (1846), tells an amusing incident in the life of Sir George Etherege, the playright, who having run up a bill at Locket's ordinary, a coffee house much frequented by dramatists of the period, and finding himself unable to

pay, began to absent himself from the place. Mrs. Locket thereupon sent a man to dun and to threaten him with prosecution if he did not pay. Sir George sent back word that if she stirred a step in the matter he would kiss her. On receiving this answer, the good lady, much exasperated, called for her hood and scarf, and told her husband, who interposed, that "she would see if there was any fellow alive who would have the impudence—" "Prithee! my dear, don't be so rash," said her husband; "there is no telling what a man may do in his passion."

Richard Savage, the English poet and friend of Johnson, who included him in his famous *Lives of the Poets,* was arrested for the murder of James Sinclair after a drunken brawl in Robinson's coffee house in 1727. He was found guilty, but narrowly escaped the death penalty by the intercession of the countess of Hertford. A feature of his trial was the extraordinary charge to the jury of Judge Page, who for his hard words and his love of hanging, is damned to everlasting fame in the verse of Pope. The charge was:

Gentlemen of the jury! You are to consider that Mr. Savage is a very great man, a much greater man than you or I, gentlemen of the jury; that he wears very fine clothes, much finer than you or I, gentlemen of the jury; that he has an abundance of money in his pocket, much more money than you or I, gentlemen of the jury; but, gentlemen of the jury, is it not a very hard case, gentlemen of the jury, that Mr. Savage should therefore kill you or me, gentlemen of the jury?

Albert V. Lally[8] has made a collection of old coffee-house anecdotes. Among them are the following:

The story is told of how Sir Richard Steele in Button's Coffee House was once made the umpire in an amusing difference between two unnamed disputants. These two were arguing about religion, when one of them said: "I wonder, sir, you should talk of religion, when I'll hold you five guineas you can't say the Lord's prayer." "Done," said the other, "and Sir Richard Steele shall hold the stakes." The money being deposited the gentleman began with, "I believe in God", and so went right through the creed. "Well," said the other when he had finished, "I didn't think he could have done it."

There is another story of a famous judge, Sir Nicholas Bacon, who was importuned by a criminal to spare his life on account of kinship. "How so," demanded the judge. "Because my name is Hog and yours is Bacon; and hog and bacon are so near akin that they cannot be separated."

"Ay," responded the judge dryly, "but you and I cannot yet be kindred, for hog is not bacon until it is well hanged."

On another occasion a nervous barrister, pleading before this same judge, began with repeated references to his "unfortunate client." "Go on, sir," said the judge, "so far the Court is with you."

Of Jonathan Swift it is related that a gentleman who had sought to persuade him to accept an invitation to dinner said, in way of special inducement, "I'll send you my bill of fare." "Send me rather your bill of company," retorted Swift, showing his appreciation of the truth that not that which is eaten, but those who eat, form the more important part of a good dinner.

On the occasion when the "dreadful Judge Jeffreys" was trying Compton, bishop of London, before the Court of High Commission, that prelate, as Campbell relates in his *Lives of the Lord Chancellors,* complained of having no copy of the indictment. Jeffreys replied to this excuse that "all the coffee houses had it for a penny." The case being resumed after the lapse of a week, the bishop again protested that he was unprepared, owing to his continued difficulty in obtaining a copy of the necessary document. Jeffreys was obliged once more to adjourn the case, and in so doing offered this bantering apology:

"My lord," said he, "in telling you our commission was to be seen in every coffee house, I did not speak with any design to reflect on your lordship, as if you were a haunter of coffee houses. I abhor the thoughts of it!"

As the Judge had once been distinctly opposed to the party and principles which he went to such a length in supporting, so had he formerly owed something to the very institution against which his last blow was directed. Roger North relates (and Campbell repeats the story) that, "after he was called to the bar, he used to sit in coffee houses and order his man to come and tell him that company attended him at his chamber; at which he would huff and say, 'let them stay a little, I will come presently,' and thus made a show of business."

John Timbs, in his *Clubs and Club Life in London,* has a host of anecdotes and stories of the old London coffee houses, among them the following:

Garraway's noted coffee-house, situated in Change-alley, Cornhill, had a threefold celebrity;

[8] *The Pot and Kettle,* Boston, 1920 (vol. iii: no. 2).

"His Warmest Welcome at an Inn"

The George Inn of today has retained a portion of its old galleries, the original of which completely surrounded the courtyard in typical "Dickens Inn" style. The visitor can imagine Mr. Pickwick emerging from the door of one of the bedrooms and calling into the yard to Sam Weller. In the old-fashioned coffee room on the ground floor one may still lunch and dine enclosed in high bench seats

tea was first sold in England here; it was a place of great resort in the time of the South Sea Bubble; and was later a place of great mercantile transactions. The original proprietor was Thomas Garway, tobacconist and coffeeman, the first who retailed tea, recommending it as a cure of all disorders.

Ogilby, the compiler of the *Britannia*, had his standing lottery of books at Mr. Garway's Coffee-house from April 7, 1673, till wholly drawn off. And, in the "Journey through England," 1722, Garraway's, Robins's, and Joe's are described as the three celebrated coffee-houses: "In the first, the People of Quality, who have business in the City, and the most considerable and wealthy citizens frequent. In the second the Foreign Banquiers, and often even Foreign Ministers. And in the third, the buyers and sellers of stock."

Wines were sold at Garraway's in 1673, "by the candle", that is, by auction, while an inch of candle burns. In the *Tatler*, No. 147, we read: "Upon my coming home last night, I found a very handsome present of French wine, left for me, as a taste of 216 hogshead, which are to be put on sale at 20£ a hogshead, at Garraway's Coffee-house, in Exchange alley" etc. The sale by candle is not, however, by candlelight, but during the day. At the commencement of the sale, when the auctioneer has read a description of the property, and the conditions on which it is to be disposed of, a piece of candle, usually an inch long, is lighted, and he who is the last bidder at the time the light goes out is declared the purchaser.

Swift, in his *Ballad on the South Sea Scheme*, 1721, did not forget Garraway's:

There is a gulf, where thousands fell,
  Here all the bold adventurers came,
A narrow sound, though deep as hell,
  'Change alley is the dreadful name.

Subscribers here by thousands float,
  And jostle one another down,
Each paddling in his leaky boat,
  And here they fish for gold and drown.

Now buried in the depths below,
  Now mounted up to heaven again,
They reel and stagger to and fro,
  At their wits' end, like drunken men.

Meantime secure on Garway cliffs,
  A savage race, by shipwrecks fed,
Lie waiting for the founder'd skiffs,
  And strip the bodies of the dead.

Dr. Jno. Radcliff, who was a rash speculator in the South Sea Scheme, was usually planted at a table at Garraway's about Exchange time, to watch the turn of the market; and here he was seated when the footman of his powerful rival, Dr. Edward Hannes, came into Garraway's and inquired by way of a puff, if Dr. H. was there. Dr. Radcliff, who was surrounded with several apothecaries and chirurgeons that flocked about him, cried out, "Dr. Hannes is not here," and desired to know "who wants him?" The fellow's reply was, "such a lord and such a lord;" but he was taken up with the dry rebuke, "No, no, friend, you are mistaken; the Doctor wants those lords." One of Radcliff's ventures was five thousand guineas upon one South Sea project. When he was told at Garraway's that 'twas all lost, "Why," said he, "'tis but going up five thousand pair of stairs more." "This answer," says Tom Brown, "deserved a statue."

Jonathan's Coffee-house was another Change-alley coffee-house, which is described in the *Tatler*, No. 38, as "the general mart of stock-jobbers," and the *Spectator*, No. 1, tells us that he "sometimes passes for a Jew in the assembly of stock-jobbers at Jonathan's," This was their rendezvous, where gambling of all sorts was carried on, notwithstanding a former prohibition against the assemblage of the jobbers, issued by the City of London, which prohibition continued unrepealed until 1825.

The *Spectator*, No. 16, notices some gay frequenters of the Rainbow Coffee-house in Fleet Street: "I have received a letter desiring me to be very satirical upon the little muff that is now in fashion; another informs me of a pair of silver garters buckled below the knee, that have been lately seen at the Rainbow Coffee-house in Fleet Street."

Mr. Moncrieff, the dramatist, used to tell that about 1780, this house was kept by his grandfather, Alexander Moncrieff, when it retained its original title of "The Rainbow Coffee-house."

Nando's Coffee-house at the east corner of Inner Temple-lane, No. 17, Fleet-Street, by some confused with Groom's house, No. 16, was the favourite haunt of Lord Thurlow before he dashed into law practice. At this coffee-house a large attendance of professional loungers was attracted by the fame of the punch and the charms of the landlady, which, with the small wits, were duly admired by and at the bar. One evening, the famous cause of Douglas *v.* the Duke of Hamilton was the topic of discussion, when Thurlow being present, it was suggested, half in earnest, to appoint him junior counsel, which was done. This employment brought him acquaintance with the Duchess of Queensberry, who saw at once the value of a man like Thurlow, and recommended Lord Bute to secure him by a silk gown.

Dick's Coffee-house, at No. 8, Fleet-street, (south side, near Temple Bar) was originally "Richard's", named from Richard Torner, or Turner, to whom the house was let in 1680. Richard's was frequented by Cowper, when he lived in the Temple. In his own account of his insanity, Cowper tells us:

"At breakfast I read the newspaper, and in it a letter, which, the further I perused it, the more closely engaged my attention. I cannot now recollect the purport of it; but before I had finished it, it appeared demonstratively true to me that it was a libel or satire upon me. The author appeared to be acquainted with my purpose of self-destruction, and to have written that letter on purpose to secure and hasten the execution of it. My mind, probably, at this time began to be disordered; however it was, I was certainly given to a strong delusion. I said within myself, 'Your cruelty shall be gratified; you shall have your revenge,' and flinging down the paper in a fit of strong passion, I rushed hastily out of the room; directing my way towards the fields, where I intended to find some house to die in; or, if not, determined to poison myself in a ditch, where I could meet with one sufficiently retired."

Lloyd's Coffee-house was one of the earliest establishments of its kind; it is referred to in a poem printed in the year 1700, called the *Wealthy Shopkeeper, or Charitable Christian*:

Now to Lloyd's Coffee-house he never fails,
To read the letters, and attend the sales.

In 1710, Steele (*Tatler*, No. 246) dates from Lloyd's his Petition on Coffee-house Orators and Newsvendors. And Addison, in *Spectator*, April 23, 1711, relates this droll incident: "About a week since there happened to me a very odd accident, by reason of one of these my papers of minutes which I had accidentally dropped at Lloyd's Coffee-house, where the auctions are usually kept. Before I missed it, there were a cluster of people who had found it, and were diverting themselves with it at one end of the coffee-house. It had raised so much laughter among them before I observed what they were about, that I had not the courage to own it. The boy of the coffee-house, when they had done with it, carried it about in his hand, asking everybody if they had dropped a written paper; but nobody challenging it, he was ordered by those merry gentlemen who had before perused it, to get up into the auction pulpit, and read it to the whole room, that if anybody would own it they might. The boy accordingly mounted the pulpit, and with a very audible voice read what proved to be minutes, which made the whole coffee-house very merry; some of them concluded it was written by a madman, and others by somebody that had been taking notes out of the *Spectator*. After it was read, and the boy was coming out of the pulpit, the *Spectator* reached his arm out, and desired the boy to given it him; which was done according. This drew the whole eyes of the company upon the *Spectator;* but after casting a cursory glance over it, he shook his head twice or thrice at the reading of it, twisted it into a kind of match, and lighted his pipe with it. 'My profound silence,' says the *Spectator*, 'together with the steadiness of my countenance, and the gravity of my behaviour during the

whole transaction, raised a very loud laugh on all sides of me; but as I had escaped all suspicion of being the author, I was very well satisfied, and applying myself to my pipe and the *Postman*, took no further notice of anything that passed about me.'"

The Smyrna Coffee-house in Pall Mall, was, in the reign of Queen Anne, famous for "that cluster of wise-heads" found sitting every evening from the left side of the fire to the door. The following announcement in the *Tatler*, No. 78, is amusing: "This is to give notice to all ingenious gentlemen in and about the cities of London and Westminster, who have a mind to be instructed in the noble sciences of music, poetry and politics, that they repair to the Smyrna Coffee-house, in Pall Mall, betwixt the hours of eight and ten at night, where they may be instructed gratis, with elaborate essays 'by word of mouth', on all or any of the above-mentioned arts."

St. James's Coffee-house was the famous Whig coffee-house from the time of Queen Anne till late in the reign of George III. It was the last house but one on the south-west corner of St. James's street, and is thus mentioned in No. 1 of the *Tatler*: "Foreign and Domestic News you will have from St. James's Coffee-house." It occurs also in the passage quoted previously from the *Spectator*. The St. James's was much frequented by Swift; letters for him were left here. In his Journal to Stella he says: "I met Mr. Harley, and he asked me how long I had learnt the trick of writing to myself? He had seen your letter through the glass case at the Coffee-house, and would swear it was my hand.'

Elliott, who kept the coffee-house, was, on occasions, placed on a friendly footing with his guests. Swift, in his Journal to Stella, November 19, 1710, records an odd instance of this familiarity: "This evening I christened our coffee-man Elliott's child; when the rogue had a most noble supper, and Steele and I sat amongst some scurvy company over a bowl of punch."

In the first advertisement of Lady Mary Wortley Montagu's "Town Eclogues," they are stated to have been read over at the St. James's Coffee-house, when they were considered by the general voice to be productions of a Lady of Quality. From the proximity of the house to St. James's Palace, it was much frequented by the Guards; and we read of its being no uncommon circumstance to see Dr. Joseph Warton at breakfast in the St. James's Coffee-house, surrounded by officers of the Guards, who listened with the utmost attention and pleasure to his remarks.

To show the order and regularity observed at the St. James's, we may quote the following advertisement, appended to the *Tatler*, No. 25; "To prevent all mistakes that may happen among gentlemen of the other end of the town, who come but once a week to St. James's Coffee-house, either by miscalling the servants, or requiring such things from them as are not properly within their respective provinces, this is to give notice that Kidney, keeper of the book-debts of the outlying customers, and observer of those who go off without paying, having resigned that employment, is succeeded by John Sowton; to whose place of enterer of messages and first coffee-grinder, William Bird is promoted; and Samuel Burdock comes as shoe-cleaner in the room of the said Bird."

But the St. James's is more memorable as the house where originated Goldsmith's celebrated poem, "Retaliation." The poet belonged to a temporary association of men of talent, some of them members of the Club, who dined together occasionally here. At these dinners he was generally the last to arrive. On one occasion, when he was later than usual, a whim seized the company to write epitaphs on him as "the late Dr. Goldsmith", and several were thrown off in a playful vein. The only one extant was written by Garrick, and has been preserved, very probably, by its pungency:

> Here lies poet Goldsmith, for shortness called Noll;
> He wrote like an angel, but talked like poor Poll.

Goldsmith did not relish the sarcasm, especially coming from such a quarter; and, by way of *retaliation*, he produced the famous poem, of which Cumberland has left a very interesting account, but which Mr. Forster, in his "Life of Goldsmith", states to be "pure romance". The poem itself, however, with what was prefixed to it when published, sufficiently explains its own origin. What had formerly been abrupt and strange in Goldsmith's manners, had now so visibly increased, as to become matter of increased sport to such as were ignorant of its cause; and a proposition made at one of the dinners, when he was absent, to write a series of epitaphs upon him (his "country dialect" and his awkward person) was agreed to, and put in practice by several of the guests. The active aggressors appear to have been Garrick, Doctor Bernard, Richard Burke, and Caleb Whitefoord. Cumberland says he, too, wrote an epitaph; but it was complimentary and grave, and hence the grateful return he received. Mr. Forster considers Garrick's epitaph to indicate the tone of all. This, with the rest, was read to Goldsmith when he next appeared at the St. James's Coffee-house, where Cumberland, however, says he never again met his friends. But "the Doctor was called on for Retaliation," says the friend who published the poem with that name, "and at their next meeting produced the following, which I think adds one leaf to his immortal wreath." "'Retaliation'", says Sir Walter Scott, "had the effect of placing the author on a more equal footing with his Society than he had ever before assumed."

Cumberland's account differs from the version formerly received, which intimates that the epitaphs were written before Goldsmith arrived: whereas the pun, "the late Dr. Goldsmith" appears to have suggested the writing of the epitaphs. In the "Retaliation", Goldsmith has not spared the characters and failings of his associates, but has drawn them with satire, at once pungent and good-humoured. Garrick is smartly chastised; Burke, the Dinner-bell of the House of Commons, is not let off; and of all

the more distinguished names of the Club, Thomson, Cumberland, and Reynolds alone escape the lash of the satirist. The former is not mentioned, and the two latter are even dismissed with unqualified and affectionate applause.

Still we quote Cumberland's account of the "Retaliation" which is very amusing from the closely circumstantial manner in which the incidents are narrated, although they have so little relationship to truth: "It was upon a proposal started by Edmund Burke, that a party of friends who had dined together at Sir Joshua Reynolds's and my house, should meet at the St. James's Coffee-house, which accordingly took place, and was repeated occasionally with much festivity and good fellowship. Dr. Bernard, Dean of Derry; a very amiable and old friend of mine, Dr. Douglas, since Bishop of Salisbury; Johnson, David Garrick, Sir Joshua Reynolds, Oliver Goldsmith, Edmund and Richard Burke, Hickey, with two or three others, constituted our party. At one of these meetings, an idea was suggested of extemporary epitaphs upon the parties present; pen and ink were called for, and Garrick, offhand, wrote an epitaph with a good deal of humour, upon poor Goldsmith, who was the first in jest, as he proved to be in reality, that we committed to the grave. The Dean also gave him an epitaph, and Sir Joshua illuminated the Dean's verses with a sketch of his bust in pen and ink, inimitably caricatured. Neither Johnson nor Burke wrote anything, and when I perceived that Oliver was rather sore, and seemed to watch me with that kind of attention which indicated his expectation of something in the same kind of burlesque with theirs; I thought it time to press the joke no further, and wrote a few couplets at a side-table, which, when I had finished, and was called upon by the company to exhibit, Goldsmith, with much agitation, besought me to spare him; and I was about to tear them, when Johnson wrested them out of my hand, and in a loud voice read them at the table. I have now lost recollection of them, and, in fact, they were little worth remembering; but as they were serious and complimentary, the effect upon Goldsmith was the more pleasing for being so entirely unexpected. The concluding line, which was the only one I can call to mind, was:

All mourn the poet, I lament the man.

"This I recollect, because he repeated it several times, and seemed much gratified by it. At our next meeting he produced his epitaphs . . . and this was the last time he ever enjoyed the company of his friends."

Will's Coffee-house, the predecessor of Button's, and even more celebrated than that coffee-house, was kept by William Urwin. It first had the title of the Red Cow, then of the Rose, and, we believe, is the same house alluded to in the pleasant story in the second number of the *Tatler*. "Supper and friends expect we at the Rose."

Dean Lockier has left this life-like picture of his interview with the presiding genius (Dryden) at Will's.

"I was about seventeen when I first came up to town," says the Dean, "an odd-looking boy, with short rough hair, and that sort of awkwardness which one always brings up at first out of the country with one. However, in spite of my bashfulness and appearance, I used, now and then, to thrust myself into Will's to have the pleasure of seeing the most celebrated wits of that time, who then resorted thither. The second time that ever I was there, Mr. Dryden was speaking of his own things, as he frequently did, especially of such as had been lately published. 'If anything of mine is good,' says he, ''tis 'Mac-Flecno', and I value myself the more upon it, because it is the first piece of ridicule written in heroics.' On hearing this I plucked up my spirit so far as to say, in a voice but just loud enough to be heard, 'that "Mac-Flecno" was a very fine poem, but that I had not imagined it to be the first that was ever writ that way.' On this, Dryden turned short upon me, as surprised at my interposing; asked me how long 'I had been a dealer in poetry'; and added, with a smile, 'Pray, Sir, what is it that you did imagine to have been writ so before?'—I named Boileau's 'Lutrin' and Tassoni's 'Secchia Rapita,' which I had read, and knew Dryden had borrowed some strokes from each. ''Tis true,' said Dryden, 'I had forgot them.' A little after, Dryden went out, and in going, spoke to me again, and desired me to come and see him the next day. I was highly delighted with the invitation; went to see him accordingly; and was well acquainted with him after, as long as he lived."

Will's Coffee-house was the open market for libels and lampoons, the latter named from the established burden formerly sung to them:

Lampone, lampone, camerada lampone.

There was a drunken fellow, named Julian, who was a characterless frequenter of Will's, and Sir Walter Scott has given this account of him and his vocation:

"Upon the general practice of writing lampoons, and the necessity of finding some mode of dispersing them, which should diffuse the scandal widely while the authors remained concealed, was founded the self-erected office of Julian, Secretary, as he called himself, to the Muses. This person attended Will's, the Wits' Coffee-house, as it was called; and dispersed among the crowds who frequented that place of gay resort copies of the lampoons which had been privately communicated to him by their authors. 'He is described,' says Mr. Malone, 'as a very drunken fellow, and at one time was confined for a libel.'"

Tom Brown describes 'a Wit and a Beau set up with little or no expense. A pair of red stockings and a swordknot set up one, and peeping once a day in at Will's, and two or three second-hand sayings, the other.'

Pepys, one night, going to fetch home his wife, stopped in Covent Garden, at the Great Coffee-house there, as he called Will's, where he never was before: "Where," he adds, "Dryden, the poet (I knew at Cambridge), and all the Wits of the town, and Harris the player,

and Mr. Hoole of our College. And had I had time then, or could at other times, it will be good coming thither, for there, I perceive, is very witty and pleasant discourse. But I could not tarry, and, as it was late, they were all ready to go away."

Addison passed each day alike, and much in the manner that Dryden did. Dryden employed his mornings in writing, dined *en famille*, and then went to Will's, "only he came home earlier o' nights."

Pope, when very young, was impressed with such veneration for Dryden, that he persuaded some friends to take him to Will's Coffee-house, and was delighted that he could say that he had seen Dryden. Sir Charles Wogan, too, brought up Pope from the Forest of Windsor, to dress *a la mode*, and introduce at Will's Coffee-house. Pope afterwards described Dryden as "a plump man with a down look, and not very conversible," and Cibber could tell no more "but that he remembered him a decent old man, arbiter of critical disputes at Will's." Prior sings of—

> The younger Stiles,
> Whom Dryden pedagogues at Will's!

Most of the hostile criticism on his Plays, which Dryden has noticed in his various Prefaces, appear to have been made at his favourite haunt, Will's Coffee-house.

Dryden is generally said to have been returning from Will's to his house in Gerard Street, when he was cudgelled in Rose Street by three persons hired for the purpose by Wilmot, Earl of Rochester, in the winter of 1679. The assault, or "the Rose-alley Ambuscade," certainly took place; but it is not so certain that Dryden was on his way from Will's, and he then lived in Long-acre, not Gerard Street.

It is worthy of remark that Swift was accustomed to speak disparagingly of Will's, as in his "Rhapsody on Poetry:"

> Be sure at Will's the following day
> Lie snug, and hear what critics say;
> And if you find the general vogue
> Pronounces you a stupid rogue,
> Damns all your thoughts as low and little;
> Sit still, and swallow down your spittle.

Swift thought little of the frequenters of Will's: he used to say, the worst conversation he ever heard in his life was at Will's Coffee-house, where the wits (as they were called) used formerly to assemble; that is to say, five or six men who had writ plays or at least prologues, or had a share in a miscellany, came thither, and entertained one another with their trifling composures, in so important an air as if they had been the noblest efforts of human nature, or that the fate of kingdoms depended on them."

In the first number of the *Tatler*, poetry is promised under the article of Will's Coffee-house. The place, however, changed after Dryden's time: "you used to see songs, epigrams, and satires in the hands of every man you met, you have now only a pack of cards; and instead of the cavils about the turn of the expression, the elegance of the style, and the like, the learned now dispute only about the truth of the game." "In old times, we used to sit upon a play here, after it was acted, but now the entertainment's turned another way."

The *Spectator* is sometimes seen "thrusting his head into a round of politicians at Will's, and listening with great attention to the narratives that are made in these little circular audiences." Then, we have as an instance of no one member of human society but that would have some little pretension for some degree in it, "like him who came to Will's Coffee-house upon the merit of having writ a posie of a ring." And, "Robin, the porter who waits at Will's, is the best man in town for carrying a billet: the fellow has a thin body, swift step, demure looks, sufficient sense, and knows the town."

After Dryden's death, in 1701, Will's continued for about ten years to be still the Wits' Coffee-house, as we see by Ned Ward's account, and by the "Journey through England" in 1722.

Pope entered with keen relish into society, and courted the correspondence of the town wits and coffee-house critics. Among his early friends was Mr. Henry Cromwell, one of the *cousinry* of the Protector's family: he was a bachelor, and spent most of his time in London; he had some pretensions to scholarship and literature, having translated several of Ovid's Elegies, for Tonson's Miscellany. With Wycherly, Gay, Dennis, the popular actors and actresses of the day, and with all the frequenters of Will's, Cromwell was familiar. He had done more than take a pinch out of Dryden's snuff-box, which was a point of high ambition and honor at Will's; he had quarrelled with him about a frail poetess, Mrs. Elizabeth Thomas, whom Dryden had christened Corinna, and who was also known as Sappho. Gay characterized this literary and eccentric beau as

> Honest, hatless Cromwell, with red breeches:

it being his custom to carry his hat in his hand when walking with ladies. What with ladies and literature, rehearsals and reviews, and critical attention to the quality of his coffee and Brazil snuff, Henry Cromwell's time was fully occupied in town. Cromwell was a dangerous acquaintance for Pope at the age of sixteen or seventeen, but he was a very agreeable one. Most of Pope's letters to his friends are addressed to him at the Blue Hall, in Great Wild-street, near Drury Lane, and others to "Widow Hambledon's Coffee-house, at the end of Princes-street, near Drury-lane, London." Cromwell made one visit to Binfield; on his return to London, Pope wrote to him, "referring to the ladies in particular," and to his favorite coffee.

Will's was the great resort for the wits of Dryden's time, after whose death it was transferred to Button's. Pope describes the houses as "opposite each other, in Russell-street, Covent Garden," where Addison established Daniel Button, in a new house, about 1712; and his fame, after the production of *Cato*, drew many of the Whigs thither. Button had been servant to the Countess of Warwick. The house is more correctly described as "over against Tom's, near the middle of the south side of the street."

Addison was the great patron of Button's; but it is said that when he suffered any vexation from his Countess, he withdrew from Button's house. His chief companions, before he married Lady Warwick, were Steele, Budgell, Philips, Carey, Davenant, and Colonell Brett. He used to breakfast with one or other of them in St. James's-place, dine at taverns with them, then to Button's, and then to some tavern again, for supper in the evening; and this was the usual round of his life, as Pope tells us in Spencer's Anecdotes, where Pope also says: "Addison usually studied all the morning, then met his party at Button's, dined there, and stayed five or six hours; and sometimes far into the night. I was of the company for about a year, but found it too much for me; it hurt my health, and so I quitted it.' Again: "There had been a coldness between me and Mr. Addison for some time, and we had not been in company together for a good while anywhere but at Button's Coffee-house, where I used to see him almost every day."

Here Pope is reported to have said of Patrick, the lexicographer, that "a dictionary-maker might know the meaning of one word, but not of two put together."

Button's was the receiving house for contributions to *The Guardian*, for which purpose was put up a lion's head letter box, in imitation of the celebrated lion at Venice, as humorously announced. Thus:

"N. B.—Mr. Ironside has, within five weeks last past, muzzled three lions, gorged five, and killed one. On Monday next the skin of the dead one will be hung up, *in terrorem*, at Button's Coffee house."

* * *

"I intend to publish once every week the roarings of the Lion, and hope to make him roar so loud as to be heard over all the British nation. I have, I know not how, been drawn into tattle of myself, more majorum, almost the length of a whole *Guardian*. I shall therefore fill up the remaining part of it with what still relates to my own person, and my correspondents. Now I would have them all know that on the 20th instant. it is my intention to erect a Lion's Head, in imitation of those I have described in Venice, through which all the private commonwealth is said to pass. This head is to open a most wide and voracious mouth, which shall take in such letters and papers as are conveyed to me by my correspondents, it being my resolution to have a particular regard to all such matters as come to my hands through the mouth of the Lion. There will be under it a box, of which the key will be in my own custody, to receive such papers as are dropped into it. Whatever the Lion swallows I shall digest for the use of the publick. This head requires some time to finish, the workmen being resolved to give it several masterly touches, and to represent it as ravenous as possible. It will be set up in Button's Coffee-house, in Covent Garden, who is directed to show the way to the Lion's Head, and to instruct any young author how to convey his works into the mouth of it with safety and secrecy."

* * *

"I think myself obliged to acquaint the publick, that the Lion's Head, of which I advertised them about a fortnight ago, is now erected at Button's Coffee-house, in Russell-street, Covent Garden, where it opens its mouth at all hours for the reception of such intelligence as shall be thrown into it. It is reckoned an excellent piece of workmanship, and was designed by a great hand in imitation of the antique Egyptian lion, the face of it being compounded out of that of a lion and a wizard. The features are strong and well furrowed. The whiskers are admired by all that have seen them. It is planted on the western side of the Coffee-house, holding its paws under the chin, upon a box, which contains everything that he swallows. He is, indeed, a proper emblem of knowledge and action, being all head and paws."

* * *

"Being obliged, at present, to attend a particular affair of my own, I do empower my printer to look into the arcana of the Lion, and select out of them such as may be of publick utility; and Mr. Button is hereby authorized and commanded to give my said printer free ingress and egress to the lion, without any hindrance, let, or molestation whatsoever, until such time as he shall receive orders to the contrary. And, for so doing, this shall be his warrant."

* * *

"My Lion, whose jaws are at all times open to intelligence, informs me that there are a few enormous weapons still in being; but that they are to be met with only in gaming houses and some of the obscure retreats of lovers, in and about Drury-lane and Covent Garden."

This memorable Lion's Head was tolerably well carved: through the mouth the letters were dropped into a till at Button's; and beneath were inscribed these two lines from Martial:

Cervantur magnis isti Cervicibus ungues;
Non nisi delicta pascitur ille fera.

The head was designed by Hogarth, and is etched in Ireland's "Illustrations'. Lord Chesterfield is said to have once offered for the Head fifty guineas. From Button's it was removed to the Shakspeare's Head Tavern, under the Piazza, kept by a person named Tomkyns; and in 1751, was, for a short time, placed in the Bedford Coffee-house immediately adjoining the Shakspeare, and there employed as a letter-box by Dr. John Hill, for his *Inspector*. In 1769, Tomkyns was succeeded by his waiter, Campbell, as proprietor of the tavern and lion's head, and by him the latter was retained until November 8, 1804, when it was purchased by Mr. Charles Richardson, of Richardson's Hotel, for 17£ 10s., who also possessed the original sign of the Shakspeare's Head. After Mr. Richardson's death in 1827, the Lion's Head devolved to his son, of whom it was bought by the Duke of Bedford, and deposited at Woburn Abbey, where it still remains.

Pope was subjected to much annoyance and insult at Button's. Sir Samuel Garth wrote to Gay, that everybody was pleased with Pope's

Hogarth pel:
S Ireland fecit
Characters who frequented Buttons Coffee-house about the year 1730
From the original drawing by HOGARTH in the Collection of

ALEXANDER POPE AT BUTTON'S COFFEE HOUSE — 1730
From a drawing by Hogarth. The man opposite the seated figure is thought to be Pope

Translation, "but a few at Button's;" to which Gay adds, to Pope, "I am confirmed that at Button's your character is made very free with, as to morals, etc."

Cibber, in a letter to Pope, says: "When you used to pass your hours at Button's, you were even there remarkable for your satirical itch of provocation; scarce was there a gentleman of any pretension to wit, whom your unguarded temper had not fallen upon in some biting epigram, among which you once caught a pastoral Tartar, whose resentment, that your punishment might be proportionate to the smart of your poetry, had stuck up a birchen rod in the room, to be ready whenever you might come within reach of it; and at this rate you writ and rallied and writ on, till you rhymed yourself quite out of the coffee-house." The "pastoral Tartar" was Ambrose Philips, who, says Johnson, "hung up a rod at Button's, with which he threatened to chastise Pope."

Pope, in a letter to Crags, thus explains the affair: "Mr. Philips did express himself with much indignation against me one evening at Button's Coffee-house (as I was told), saying that I was entered into a cabal with Dean Swift and others, to write against the Whig interest, and in particular to undermine his own reputation and that of his friends, Steele and Addison; but Mr. Philips never opened his lips to my face, on this or any like occasion, though I was almost every night in the same room with him, nor ever offered me any indecorum. Mr. Addison came to me a night or two after Philips had talked in this idle manner, and assured me of his disbelief of what had been said, of the friendship we should always maintain, and desired I would say nothing further of it. My Lord Halifax did me the honour to stir in this matter, by speaking to several people to obviate a false aspersion, which might have done me no small prejudice with one party. However, Philips did all he could secretly to continue to report with the Hanover Club, and kept in his hands the subscriptions paid for me to him, as secretary to that Club. The heads of it have since given him to understand, that they take it ill; but (upon the terms I ought to be with such a man) I would not ask him for this money, but commissioned one of the players, his equals, to receive it. This is the whole matter; but as to the secret grounds of this malignity, they will make a very pleasant history when we meet."

Another account says that the rod was hung up at the bar of Button's, and that Pope avoid-

ed it by remaining at home—"his usual custom." Philips was known for his courage and superior dexterity with the sword; he afterwards became justice of the peace, and used to mention Pope, whenever he could get a man in authority to listen to him, as an enemy to the Government.

At Button's the leading company, particularly Addison and Steele, met in large flowing flaxen wigs. Sir Godfrey Kneller, too, was a frequenter.

The master died in 1731, when in the *Daily Advertiser*, October 5 appeared the following:

"On Sunday morning, died, after three days' illness, Mr. Button, who formerly kept Button's Coffee-house, in Russell-street, Covent Garden: a very noted house for wits, being the place where the Lyon produced the famous *Tatlers* and *Spectators*, written by the late Mr. Secretary Addison and Sir Richard Steele, Knt., which works will transmit their names with honour to posterity."

Among other wits who frequented Button's were Swift, Arbuthnot, Savage, Budgell, Martin Folkes, and Drs. Garth and Armstrong. In 1720, Hogarth mentions "four drawings in Indian ink" of the characters at Button's Coffee-house. In these were sketches of Arbuthnot, Addison, Pope (as it is conjectured) and a certain Count Viviani, identified years afterwards by Horace Walpole, when the drawings came under his notice. They subsequently came into Ireland's possession.

Jemmy Maclaine, or M'Clean, the fashionable highwayman, was a frequent visitor at Button's. Mr. John Taylor, of the *Sun* newspaper, describes Maclaine as a tall, showy, good-looking man. A Mr. Donaldson told Taylor that, observing Maclaine paid particular attention to the barmaid of the Coffee-house, the daughter of the landlord, he gave a hint to the father of Maclaine's dubious character. The father cautioned the daughter against the highwayman's addresses, and imprudently told her by whose advice he put her on her guard; she as imprudently told Maclaine. The next time Donaldson visited the coffee-room, and sitting in one of the boxes, Maclaine entered, and in a loud tone said, "Mr. Donaldson, I wish to *spake* to you in a private room." Mr. D. being unarmed, and naturally afraid of being alone with such a man, said, in answer, that as nothing could pass between them that he did not wish the whole world to know, he begged leave to decline the invitation. "Very well," said Maclaine, as he left the room, "we shall meet again." A day or two after, as Mr. Donaldson was walking near Richmond, in the evening, he saw Maclaine on horseback; but fortunately, at that moment, a gentleman's carriage appeared in view, when Maclaine immediately turned his horse towards the carriage, and Donaldson hurried into the protection of Richmond as fast as he could. But for the appearance of the carriage, which presented better prey, it is possible that Maclaine would have shot Mr. Donaldson immediately.

Maclaine's father was an Irish Dean; his brother was a Calvinist minister in great esteem at the Hague. Maclaine himself had been a grocer in Welbeck-street, but losing a wife that he loved extremely, and by whom he had one little girl, he quitted his business with two hundred pounds in his pockets which he soon spent, and then took to the road with only one companion, Plunket, a journeyman apothecary.

Maclaine was taken in the autumn of 1750, by selling a laced waistcoat to a pawnbroker in Monmouth-street, who happened to carry it to the very man who had just sold the lace. Maclaine impeached his companion, Plunket, but he was not taken. The former got into verse: Gray, in his "Long Story," sings:

> A sudden fit of ague shook him;
> He stood as mute as poor M'Lean.

Button's subsequently became a private house, and here Mrs. Inchbald lodged, probably, after the death of her sister, for whose support she practised such noble and generous self-denial. Mrs. Inchbald's income was now 172£ a year, and we are told that she now went to reside in a boarding-house, where she enjoyed more of the comforts of life. Phillips, the publisher, offered her a thousand pounds for her Memoirs, which she declined. She died in a boarding-house at Kensington, on the 1st of August, 1821, leaving about 6,000£ judiciously divided amongst her relatives. Her simple and parsimonious habits were very strange. "Last Thursday," she writes, "I finished scouring my bedroom, while a coach with a coronet and two footmen waited at my door to take me an airing."

"One of the most agreeable memories connected with Button's," says Leigh Hunt, "is that of Garth, a man whom, for the sprightliness and generosity of his nature, it is a pleasure to name. He was one of the most amiable and intelligent of a most amiable and intelligent class of men—the physicians."

It was just after Queen Anne's accession that Swift made acquaintance with the leaders of the wits at Button's. Ambrose Philips refers to him as the strange clergyman whom the frequenters of the Coffee-house had observed for some days. He knew no one, no one knew him. He would lay his hat down on a table, and walk up and down at a brisk pace for half an hour without speaking to any one, or seeming to pay attention to anything that was going forward. Then he would snatch up his hat, pay his money at the bar, and walk off, without having opened his lips. The frequenters of the room had christened him "the mad parson." One evening, as Mr. Addison and the rest were observing him, they saw him cast his eyes several times upon a gentleman in boots, who seemed to be just come out of the country. At last, Swift advanced towards this bucolic gentleman, as if intending to address him. They were all eager to hear what the dumb parson had to say, and immediately quitted their seats to get near him. Swift went up to the country gentleman, and in a very abrupt manner, without any previous salute, asked him, "Pray, Sir, do you know any good weather in the world?" After staring a little at the singularity of Swift's manner and the oddity of the question, the gentleman answered, "Yes, Sir, I thank God I

remember a great deal of good weather in my time.'—"That is more," replied Swift, "than I can say; I never remember any weather that was not too hot or too cold, too wet or too dry; but, however God Almighty contrives it, at the end of the year 'tis all very well."

Sir Walter Scott gives, upon the authority of Dr. Wall, of Worcester, who had it from Dr. Arbuthnot himself, the following anecdote — less coarse than the version generally told. Swift was seated by the fire at Button's; there was sand on the floor of the coffee-room, and Arbuthnot, with a design to play upon this original figure, offered him a letter, which he had been just addressing, saying at the same time, "There—sand that"—"I have got no sand,' answered Swift, "but I can help you to a little *gravel*." This he said so significantly, that Arbuthnot hastily snatched back his letter, to save it from the fate of the capital of Lilliput.

Tom's Coffee-house in Birchin-lane, Cornhill, though in the main a mercantile resort, acquired some celebrity from its having been frequented by Garrick, who, to keep up an interest in the City, appeared here about twice in a winter at 'Change time, when it was the rendezvous of young merchants.

Hawkins says: "After all that has been said of Mr. Garrick, envy must own that he owed his celebrity to his merit; and yet, of that himself so diffident, that he practiced sundry little but innocent arts, to insure the favour of the public:" yet, he did more. When a rising actor complained to Mrs. Garrick that the newspapers abused him, the widow replied, "You should write your own criticisms; David always did."

One evening, Murphy was at Tom's, when Colley Cibber was playing at whist, with an old general for his partner. As the cards were dealt to him, he took up every one in turn, and expressed his disappointment at each indifferent one. In the progress of the game he did not follow suit, and his partner said, "What! have you not a spade, Mr. Cibber?" The latter, looking at his cards, answered, "Oh yes, a thousand;" which drew a very peevish comment from the general. On which, Cibber, who was shockingly addicted to swearing, replied, "Don't be angry, for—I can play ten times worse if I like."

The celebrated Bedford Coffee-house, in Covent Garden, once attracted so much attention as to have published, "Memoirs of the Bedford Coffee-house," two editions, 1751 and 1763. It stood "under the Piazza, in Covent Garden," in the north-west corner, near the entrance to the theatre, and has long ceased to exist.

In the *Connoisseur*, No. 1, 1754, we are assured that "this Coffee-house is every night crowded with men of parts. Almost every one you meet is a polite scholar and a wit. Jokes and bon-mots are echoed from box to box: every branch of literature is critically examined, and the merit of every production of the press, or performance of the theatres, weighed and determined."

And in the above-named "Memoirs" we read that "this spot has been signalized for many years as the emporium of wit, the seat of criticism, and the standard of taste.—Names of those who frequented the house: Foote, Mr. Fielding, Mr. Woodward, Mr. Leone, Mr. Murphy, Mopsy, Dr. Arne. Dr. Arne was the only man in a suit of velvet in the dog-days."

Stacie kept the Bedford when John and Henry Fielding, Hogarth, Churchill, Woodward, Lloyd, Dr. Goldsmith and many others met there and held a gossiping shilling rubber club. Henry Fielding was a very smart fellow.

The *Inspector* appears to have given rise to this reign of the Bedford, when there was placed here the Lion from Button's, which proved so serviceable to Steele, and once more fixed the dominion of wit in Covent Garden.

The reign of wit and pleasantry did not, however, cease at the Bedford at the demise of the *Inspector*. A race of punsters next succeeded. A particular box was alloted to this occasion, out of hearing of the lady of the bar, that the *double entendres*, which were sometimes very indelicate, might not offend her.

The Bedford was beset with scandalous nuisances, of which the following letter, from Arthur Murphy to Garrick, April 10, 1768, presents a pretty picture:

"Tiger Roach (who used to bully at the Bedford Coffee-house because his name was Roach) is set up by Wilke's friends to burlesque Lutrel and his pretensions. I own I do not know a more ridiculous circumstance than to be a joint candidate with the Tiger. O'Brien used to take him off very pleasantly, and perhaps you may, from his representation, have some idea of this important wight. He used to sit with a half-starved look, a black patch upon his cheek, pale with the idea of murder, or with rank cowardice, a quivering lip, and a downcast eye. In that manner he used to sit at a table all alone, and his soliloquy, interrupted now and then with faint attempts to throw off a little saliva, was to the following effect:—'Hut! hut! a mercer's 'prentice with a bag-wig;—d—n my s—l, if I would not skiver a dozen of them like larks! Hut! hut! I don't understand such airs!—I'd cudgel him back, breast and belly, for three skips of a louse!—How do you do, Pat? Hut! hut! God's blood—Larry, I'm glad to see you; 'Prentices! a fine thing indeed!—Hut! hut! How do you do, Dominick!—D—n my s—l, what's here to do!' These were the meditations of this agreeable youth. From one of these reveries he started up one night, when I was there, called a Mr. Bagnell out of the room, and most heroically stabbed him in the dark, the other having no weapon to defend himself with. In this career, the Tiger persisted, till at length a Mr. Lennard brandished a whip over his head, and stood in a menacing attitude, commanding him to ask pardon directly. The Tiger shrank from the danger, and with a faint voice pronounced—'Hut! what signifies it between you and me? Well! well! I ask your pardon.' 'Speak louder, Sir; I don't hear a word you say.' And indeed he was so very tall, that it seemed as if the sound, sent feebly from below, could not as-

cend to such a height. This is the hero who is to figure at Brentford."

Foote's favourite coffee-house was the Bedford. He was also a constant frequenter of Tom's, and took a lead in the Club held there, and already described.

Dr. Barrowby, the well-known newsmonger of the Bedford, and the satirical critic of the day, has left this whole-length sketch of Foote:

"One evening (he says) he saw a young man extravagantly dressed out in a frock suit of green and silver lace, bag-wig, sword, bouquet, and point ruffles, enter the room (at the Bedford), and immediately join the critical circle at the upper end. Nobody recognized him; but such was the ease of his bearing, and the point of humor and remark with which he at once took up the conversation, that his presence seemed to disconcert no one, and a sort of pleased buzz of 'who is he?' was still going round the room unanswered, when a handsome carriage stopped at the door; he rose, and quitted the room, and the servants announced that his name was Foote, and that he was a young gentleman of family and fortune, a student of the Inner Temple, and that the carriage had called for him on its way to the assembly of a lady of fashion". Dr. Barrowby once turned the laugh against Foote at the Bedford, when he was ostentatiously showing his gold repeater, with the remark—'Why, my watch does not go!' 'It soon *will go*,' quietly remarked the Doctor. Young Collins, the poet, who came to town in 1744 to seek his fortune, made his way to the Bedford, where Foote was supreme among the wits and critics. Like Foote, Collins was fond of fine clothes, and walked about with a feather in his hat, very unlike a young man who had not a single guinea he could call his own. A letter of the time tells us that "Collins was an acceptable companion everywhere; and among the gentlemen who loved him for a genius, may be reckoned the Doctors Armstrong, Barrowby, Hill, Messrs. Quin, Garrick, and Foote, who frequently took his opinions upon their pieces before they were seen by the public. He was particularly noticed by the geniuses who frequented the Bedford and Slaughter's Coffee-houses."

Ten years later (1754) we find Foote again supreme in his critical corner at the Bedford. The regular frequenters of the room strove to get admitted to his party at supper; and others got as near as they could to the table, as the only humor flowed from Foote's tongue. The Bedford was now in its highest repute.

Foote and Garrick often met at the Bedford, and many and sharp were their encounters. They were the two great rivals of the day. Foote usually attacked, and Garrick, who had many weak points, was mostly the sufferer. Garrick, in early life, had been in the wine trade, and had supplied the Bedford with wine; he was thus described by Foote as living in Durham-yard, with three quarts of vinegar in the cellar, calling himself a wine-merchant. How Foote must have abused the Bedford wine of this period!

One night, Foote came into the Bedford, where Garrick was seated, and there gave him an account of a most wonderful actor he had just seen. Garrick was on the tenters of suspense, and there Foote kept him a full hour. Foote brought the attack to a close by asking Garrick what he thought of Mr. Pitt's histrionic talents, when Garrick, glad of the release, declared that if Pitt had chosen the stage, he might have been the first actor upon it.

Another night, Garrick and Foote were about to leave the Bedford together, when the latter, in paying the bill, dropped a guinea; and not finding it at once, said, "Where on earth can it be gone to?"—"Gone to the devil, I think," replied Garrick, who had assisted in the search. —"Well said, David!" was Foote's reply, "let you alone for making a guinea go further than anybody else."

Churchill's quarrel with Hogarth began at the shilling rubber club, in the parlour of the Bedford; when Hogarth used some very insulting language towards Churchill, who resented it in the *Epistle*. This quarrel showed more venom than wit. "Never," says Walpole, "did two angry men of their abilities throw mud with less dexterity."

Woodward, the comedian, mostly lived at the Bedford, was intimate with Stacie, the landlord, and gave him his (W.'s) portrait, with a mask in his hand, one of the early pictures by Sir Joshua Reynolds. Stacie played an excellent game at whist. One morning about two o'clock, one of the waiters awoke him to tell him that a nobleman had knocked him up, and had desired him to call his master to play a rubber with him for one hundred guineas. Stacie got up, dressed himself, won the money, and was in bed and asleep, all within an hour.

After Macklin had retired from the stage, in 1754, he opened that portion of the Piazza-houses, in Covent Garden, afterwards known as the Tavistock Hotel. Here he fitted up a large coffee-room, a theatre for oratory, and other apartments. To a three-shilling ordinary he added a shilling lecture, or "School of Oratory and Criticism;" he presided at the dinner table, and carved for the company; after which he played a sort of "Oracle of Eloquence." Fielding has happily sketched him in his "Voyage to Lisbon": "Unfortunately for the fishmongers of London, the Dory only resides in the Devonshire seas; for could any of this company only convey one to the Temple of luxury under the piazza, where Macklin, the high priest, daily serves up his rich offerings, great would be the reward of that fishmonger."

In the Lecture, Macklin undertook to make each of his audience an orator, by teaching him how to speak. He invited hints and discussions; the novelty of the scheme attracted the curiosity of numbers; and this curiosity he still further excited by a very uncommon controversy which now subsisted, either in imagination or reality, between him and Foote, who abused one another very openly—"Squire Sammy," having for his purpose engaged the Little Theatre in the Haymarket.

Besides this personal attack, various subjects were debated here in the manner of the Robin Hood Society, which filled the Orator's pocket, and proved his rhetoric of some value.

Here is one of his combats with Foote. The subject was Duelling in Ireland, which Macklin had illustrated as far as the reign of Elizabeth. Foote cried, "Order;" he had a question to put. "Well, Sir," said Macklin, "what have you to say on this subject," "I think, Sir" said Foote, "this matter might be settled in a few words. What o'clock is it, Sir?" Macklin could not possibly see what the clock had to do with a dissertation upon Duelling, but gruffly reported the hour to be half-past nine. "Very well," said Foote," about this time of the night every gentleman in Ireland that can possibly afford it is in his third bottle of claret, and therefore in a fair way of getting drunk; and from drunkenness proceeds quarrelling, and from quarrelling, duelling, and so there's an end of the chapter." The company were much obliged to Foote for his interference, the hour being considered; though Macklin did not relish this abridgment.

The success of Foote's fun upon Macklin's Lectures, led him to establish a summer entertainment of his own at the Haymarket. He took up Macklin's notion of applying Greek tragedy to modern subjects, and the squib was so successful that Foote cleared by it 500£ in five nights, while the great Piazza Coffee-room in Covent Garden was shut up, and Macklin in the *Gazette* as a bankrupt.

But when the great plan of Mr. Macklin proved abortive, when as he said in a former prologue, upon a nearly similar occasion—

From scheming, fretting, famine and despair,
We saw to grace restor'd an exiled player;

when the town was sated with the seemingly-concocted quarrel between the two theatrical geniuses, Macklin locked his doors, all animosity was laid aside, and they came and shook hands at the Bedford; the group resumed their appearance, and, with a new master, a new set of customers was seen.

Tom King's Coffee-house was one of the old night-houses of Covent Garden Market; it was a rude shed immediately beneath the portico of St. Paul's Church, and was one "well known to all gentlemen to whom beds are unknown." Fielding in one of his Prologues says:

What rake is ignorant of King's Coffee-house?

It is in the background of Hogarth's print of *Morning* where the prim maiden lady, walking to church, is soured with seeing two fuddled *beaux* from King's Coffee-house caressing two frail women. At the door there is a drunken row, in which swords and cudgels are the weapons[9].

Harwood's *Alumni Etonenses*, p. 239, in the account of the Boys elected from Eton to King's College, contains this entry: "A. D. 1713, Thomas King, born at West Ashton, in Wiltshire, went away scholar in apprehension that his fellowship would be denied him; and afterwards kept that Coffee-house in Covent Garden, which was called by his own name."

[9] See Chapter XXXIII.

Moll King was landlady after Tom's death: she was witty, and her house was much frequented, though it was little better than a shed. "Noblemen and the first *beaux*," said Stacie, "after leaving Court would go to her house in full dress, with swords and bags, and in rich brocaded silk coats, and walked and conversed with persons of every description. She would serve chimney-sweepers, gardeners, and the market-people in common with her lords of the highest rank. Mr. Apreece, a tall thin man in rich dress, was her constant customer. He was called Cadwallader by the frequenters of Moll's." It is not surprising that Moll was often fined for keeping a disorderly house. At length, she retired from business—and the pillory—to Hempstead, where she lived on her ill-earned gains, but paid for a pew in church, and was charitable at appointed seasons, and died in peace in 1747.

The Piazza Coffee-house at the north-eastern angle of Covent Garden Piazza, appears to have originated with Macklin's; for we read in an advertisement in the *Publick Adviser*, March 5, 1756; "The Great Piazza Coffee-room, in Covent Garden."

The Piazza was much frequented by Sheridan; and here is located the well-known anecdote told of his coolness during the burning of Drury-lane Theatre, in 1809. It is said that as he sat at the Piazza, during the fire, taking some refreshment, a friend of his having remarked on the philosophical calmness with which he bore his misfortune, Sheridan replied:

"A man may surely be allowed to take a glass of wine by his *own fireside*."

Sheridan and John Kemble often dined together at the Piazza, to be handy to the theatre. During Kemble's management, Sheridan had occasion to make a complaint, which brought a "nervous" letter from Kemble, to which Sheridan's reply is amusing enough. Thus, he writes: "that the management of a theatre is a situation capable of becoming *troublesome*, is information which I do not want, and a discovery which I thought you made long ago." Sheridan then treats Kemble's letter as "a nervous flight," not to be noticed seriously, adding his anxiety for the interest of the theatre, and alluding to Kemble's touchiness and reserve; and thus concludes:

"If there is anything amiss in your mind not arising from the *troublesomeness* of your situation, it is childish and unmanly not to disclose it. The frankness with which I have dealt towards you entitles me to expect that you should have done so.

"But I have no reason to believe this to be the case; and attributing your letter to a disorder which I know ought not to be indulged, I prescribe that thou shalt keep thine appointment at the Piazza Coffee-house, tomorrow at five, and, taking four bottles of claret instead of three, to which in sound health you might stint yourself, forget that you ever wrote the letter, as I shall that I ever received it.

"R. B. Sheridan."

The Piazza facade, and interior, were of Gothic design. When the house was demolished, in its place was built the Floral Hall, after the Crystal Palace model.

The Chapter Coffee-house was a literary place of resort in Paternoster Row, more especially in connection with the Wittinagemot of the last century. A very interesting account of the Chapter, at a later period (1848) is given by Mrs. Gaskell.

Goldsmith frequented the Chapter, and always occupied one place, which for many years after was the seat of literary honor there. There are leather tokens of the Chapter Coffee-house in existence.

Child's Coffee-house, in St. Paul's Churchyard, was one of the *Spectator's* houses. "Sometimes," he says, "I smoke a pipe at Child's and whilst I seem attentive to nothing but the *Postman*, overhear the conversation of every table in the room." It was much frequented by the clergy; for the *Spectator*, No. 609, notices the mistake of a country gentleman in taking all persons in scarfs for Doctors of Divinity, since only a scarf of the first magnitude entitles him to "the appellation of Doctor from his landlady and the *Boy at Child's*."

Child's was the resort of Dr. Mead, and other professional men of eminence. The Fellows of the Royal Society came here. Whiston relates that Sir Hans Sloane, Dr. Halley and he were once at Child's when Dr. H. asked him, W., why he was not a member of the Royal Society? Whiston answered, because they durst not choose a heretic. Upon which Dr. H. said, if Sir Hans Sloane would propose him, W., he, Dr. H., would second it, which was done accordingly.

The propinquity of Child's to the Cathedral and Doctors' Commons, made it the resort of the clergy, and ecclesiastical loungers. In that respect, Child's was superseded by the Chapter, in Paternoster Row.

The London Coffee-house was established previous to the year 1731, for we find of it the following advertisement:

"May, 1731.

"Whereas, it is customery for Coffee-houses and other Public-houses, to take 8s. for a quart of Arrack, and 6s. for a quart of Brandy or Rum, made into Punch:

"This is to give notice,

That James Ashley has opened on Ludgate Hill, the London Coffee-house, Punch-house, Dorchester Beer and Welsh Ale Warehouse, where the finest and best old Arrack, Rum and French Brandy is made into Punch, with the other of the finest ingredients—viz., A quart of Arrack made into Punch for six shillings; and so in proportion to the smallest quantity, which is half-a-quartern for fourpence half-penny. A quart of Rum or Brandy made into Punch for four shillings; and so in proportion to the smallest quantity, which is half-a-quartern for fourpence half-penny; and gentlemen may have it as soon made as a gill of Wine can be drawn."

The premises occupied a Roman site; for, in 1800, in the rear of the house, in a bastion of the City Wall, was found a sepulchral monument dedicated to Claudina Martina by her husband, a provincial Roman soldier; here also were found a fragment of a statue of Hercules and a female head. In front of the Coffee-house immediately west of St. Martin's Church, stood Ludgate.

The London Coffee-house was noted for its publishers' sales of stock and copyrights. It was within the rules of the Fleet prison; and in the Coffee-house were "locked up" for the night such juries from the Old Bailey Sessions, as could not agree upon verdicts. The house was long kept by the grandfather and father of Mr. John Leech, the celebrated artist.

A singular incident occurred at the London Coffee-house, many years since: Mr. Brayley, the topographer, was present at a party here, when Mr. Broadhurst, the famous tenor, by singing a high note, caused a wine-glass on the table to break, the bowl being separated from the stem.

From *The Kingdom's Intelligencer*, a weekly paper, published by authority, in 1662, we learn that there had just been opened a "new coffee-house," with the sign of the Turk's Head, where was sold by retail "the right coffee-powder," from 4s. to 6s. 8d. per pound; that pounded in a mortar, 2s; East Indian berry, 1s. 6d.; and the right Turkie berry, well garbled, at 3s. "The ungarbled for lesse, with directions how to use the same." Also Chocolate at 2s. 6d. per pound; the perfumed from 4s. to 10s.; "also, Sherbets made in Turkie, of lemons, roses and violets perfumed; and Tea, or Chaa, according to its goodness. The house seal is Morat the Great. Gentlemen customers and acquaintances are (the next New Year's Day) invited to the sign of the Great Turk at this new Coffee-house, where Coffee will be on free cost." Morat figures as a tyrant in Dryden's "Aurung Zebe." There is a token of this house, with the sultan's head, in the Beaufoy collection[10].

Another token in the same collection, is of unusual excellence, probably by John Roettier. It has on the obverse, Morat ye Great Men did mee call,—Sultan's head; reverse, Where eare I came I conquered all.—In the field, Coffee, Tobacco, Sherbet, Tea, Chocolate, retail in Exchange Alee. "The word Tea," says Mr. Burn, "occurs on no other tokens than those issued from 'the Great Turk' Coffee-house, in Exchange alley;" in one of its advertisements, 1662, tea is from 6s. to 60s. a pound.

Competition arose. One Constantine Jennings in Threadneedle-street, over against St. Christopher's Church, advertised that coffee, chocolate, sherbet, and tea, the right Turkey berry, may be had as cheap and as good of him as is anywhere to be had for money; and that people may there be taught to prepare the said liquors gratis.

Pepys, in his "Diary," tells, September 25, 1669, of his sending for "a cup of Tea, a China Drink, he had not before tasted." Henry Bennet, Earl of Arlington, about 1666, introduced

[10] See chapter X.

tea at Court. And, in his "Sir Charles Sedley's Mulberry Garden," we are told that "he who wished to be considered a man of fashion always drank wine-and-water at dinner, and a dish of tea afterwards." These details are condensed from Mr. Burn's excellent "Beaufoy Catalogue," 2nd edition, 1855.

In Gerard-street, Soho, also, was another Turk's Head Coffee-house, where was held a Turk's Head Society; in 1777, we find Gibbon writing to Garrick: "At this time of year (August 14) the Society of the Turk's Head can no longer be addressed as a corporate body, and most of the individual members are probably dispersed: Adam Smith, in Scotland; Burke in the shades of Beaconsfield; Fox, the Lord or the devil knows where."

The place was a kind of headquarters for the Loyal Association during the Rebellion of 1745. Here was founded "The Literary Club" and a select body for the Protection and Encouragement of Art. Another Society of Artists met in Peter's-court, St. Martin's-lane, from the year 1739 to 1769. After continued squabbles, which lasted for many years, the principal artists met together at the Turk's Head, where many others having joined them, they petitioned the King (George III) to become patron of a Royal Academy of Art. His Majesty consented; and the new Society took a room in Pall Mall, opposite to Market-lane, where they remained until the King, in the year 1771, granted them apartments in Old Somerset House.

The Turk's Head Coffee-house, No. 142, in the Strand, was a favourite supping-house with Dr. Johnson and Boswell, in whose Life of Johnson are several entries, commencing with 1763—"At night, Mr. Johnson and I supped in a private room at the Turk's Head Coffee-house, in the Strand; 'I encourage this house,' said he, 'for the mistress of it is a good civil woman, and has not much business'." Another entry is—"We concluded the day at the Turk's Head Coffee-house very socially." And, August 3, 1673—"We had our last social meeting at the Turk's Head Coffee-house, before my setting out for foreign parts."

The name was afterwards changed to "The Turk's Head, Canada and Bath Coffee-house," and was a well frequented tavern and hotel.

At the Turk's Head, or Miles's Coffee-house, New Palace-yard, Westminster, the noted Rota Club met, founded by Harrington, in 1659; where was a large oval table, with a passage in the middle, for Miles to deliver his coffee.[11]

For many years previous to the streets of London being completely paved, "Slaughter's Coffee-house" was called "The Coffee-house on the Pavement." Besides being the resort of artists, Old Slaughter's was the house of call for Frenchmen.

St. Martin's-lane was long one of the headquarters of the artists of the last century. "In the time of Benjamin West," says J. T. Smith, "and before the formation of the Royal Academy, Greek-street, St. Martin's-lane, and Gerard-street, was their only colony. Old Slaughter's Coffee-house, in St. Martin's-lane, was their grand resort in the evenings, and Hogarth was a constant visitor." He lived at the Golden Head, on the eastern side of Leicester Fields, in the northern half of the Sabloniere Hotel. The head he cut out himself from pieces of cork, glued and bound together; it was placed over the street-door. At this time, young Benjamin West was living in chambers, in Bedford-street, Covent Garden, and had there set up his easel; he was married in 1765, at St. Martin's Church. Roubiliac was often to be found at Slaughter's in early life; probably before he gained the patronage of Sir Edward Walpole, through finding and returning to the baronet the pocket-book of bank-notes which the young maker of monuments had picked up in Vauxhall Gardens. Sir Edward, to remunerate his integrity, and his skill, of which he showed specimens, promised to patronize Roubiliac through life, and he faithfully performed this promise. Young Gainsborough, who spent three years amid the works of the painters in St. Martin's-lane, Hayman, and Cipriani, who were all eminently convival, were, in all probability, frequenters of Slaughter's. Smith tells us that Quin and Hayman were inseparable friends, and so convival, that they seldom parted till daylight.

Mr. Cunningham relates that here, "in early life, Wilkie would enjoy a small dinner at a small cost. I have been told by an old frequenter of the house, that Wilkie was always the last dropper-in for dinner, and that he was never seen to dine in the house by daylight. The truth is, he slaved at his art at home till the last glimpse of daylight had disappeared."

Haydon was accustomed, in the early days of his fitful career, to dine here with Wilkie. In his "Autobiography," in the year 1808, Haydon writes: "This period of our lives was one of great happiness; painting all day, then dining at the Old Slaughter Chop-house, then going to the Academy until eight, to fill up the evening, then going home to tea—that blessing of a studious man—talking over respective exploits, what he, Wilkie, had been doing and what I had been doing, and, then frequently to relieve our minds fatigued by their eight and twelve hours' work, giving vent to the most extraordinary absurdities. Often have we made rhymes on odd names, and shouted with laughter at each new line that was added. Sometimes lazily inclined after a good dinner, we have lounged about, near Drury Lane or Covent Garden, hesitating whether to go in, and often have I (knowing first that there was nothing I wished to see) assumed a virtue I did not possess, and pretending moral superiority, preached to Wilkie on the weakness of not resisting such temptations for the sake of our art and our duty, and marched him off to his studies, when he was longing to see Mother Goose."

J. T. Smith refers to Old Slaughter's as "formerly the rendezvous of Pope, Dryden and other wits, and much frequented by several eminently clever men of his day."

[11] See chapter X.

Thither came Ware, the architect, who, when a little sickly boy, was apprenticed to a chimney-sweeper, and was seen chalking the street-front of Whitehall, by a gentleman who purchased the remainder of the boy's time; gave him an excellent education; then sent him to Italy, and, upon his return, employed him, and introduced him to his friends as an architect. Ware was heard to tell this story while he was sitting to Roubiliac for his bust. Ware built Chesterfield House and several other noble mansions, and compiled a Palladio, in folio: he retained the soot in his skin to the day of his death. He was very intimate with Roubiliac, who was an opposite eastern neighbour of Old Slaughter's. Another architect, Gwynn, who competed with Mylne for designing and building Blackfriars Bridge, was also a frequent visitor at Old Slaughter's, as was Gravelot, who kept a drawing-school in the Strand, nearly opposite to Southampton-street.

Hudson, who painted the Dilettanti portraits; M'Ardell, the mezzotinto-scraper; and Luke Sullivan, the engraver of Hogarth's March to Finchley, also frequented Old Slaughter's; likewise Theodore Gardell, the portrait painter, who was executed for the murder of his landlady; and Old Moser, keeper of the Drawing Academy in Peter's-court.

Parry, the Welsh harper, though totally blind, was one of the first draught-players in England, and occasionally played with the frequenters of Old Slaughter's; and here in consequence of a bet. Roubiliac introduced Nathanial Smith (father of John Thomas), to play at draughts with Parry; the game lasted about half an hour: Parry was much agitated, and Smith proposed to give in; but as there were bets depending, it was played out, and Smith won. This victory brought Smith numerous challenges; and the dons of the Barn, a public-house, in St. Martin's-lane, nearly opposite the church, invited him to become a member; but Smith declined. The Barn, for many years, was frequented by all the noted players of chess and draughts; and it was there that they often decided games of the first importance, played between persons of the highest rank.

The Grecian Coffee-house, Devereux-court, Strand, (closed in 1843) was named from Constantine, of Threadneedle street, the *Grecian* who kept it. In the *Tatler* announcement, all accounts of learning are to be "under the title of the Grecian;" and, in the *Tatler*, No. 6: "While other parts of the town are amused with the present actions (Marlborough's) we generally spend the evening at this table (at the Grecian) in inquiries into antiquity, and think anything new, which gives us new knowledge. Thus, we are making a very pleasant entertainment to ourselves in putting the actions of Homer's Iliad into an exact journal."

The *Spectator's* face was very well known at the Grecian, a coffee-house "adjacent to the law." Occasionally it was the scene of learned discussion. Thus Dr. King relates that one evening, two gentlemen, who were constant companions, were disputing here, concerning the accent of a Greek word. This dispute was carried to such a length, that the two friends thought proper to determine it with their swords; for this purpose they stepped into Devereux-court, where one of them (Dr. King thinks his name was Fitzgerald) was run through the body, and died on the spot.

The Grecian was Foote's morning lounge. It was handy, too, for the young Templar, Goldsmith, and often did it echo with Oliver's boisterous mirth; for "it had become the favourite resort of the Irish and Lancashire Templars, whom he delighted in collecting around him, in entertaining with a cordial and unostentatious hospitality, and in occasionally amusing with his flute, or with whist, neither of which he played very well!" Here Goldsmith occasionally wound up his "Shoemaker's Holiday" with supper.

It was at the Grecian that Fleetwood Shephard told this memorable story to Dr. Tancred Robinson, who gave Richardson permission to repeat it. "The Earle of Dorset was in Little Britain, beating about for books to his taste: there was 'Paradise Lost'. He was surprised with some passages he struck upon, dipping here and there and bought it; the bookseller begged him to speak in his favour, if he liked it, for they lay on his hands as waste paper. . . . Shephard was present. My Lord took it home, read it, and sent it to Dryden, who in a short time returned it. 'This man,' says Dryden, 'cuts us all out, and the ancients, too!'"

George's Coffee-house, No. 213, Strand, near Temple Bar, was a noted resort in the eighteenth and nineteenth centuries. When it was a coffee-house, one day, there came in Sir James Lowther, who after changing a piece of silver with the coffee-woman, and paying twopence for his dish of coffee, was helped into his chariot, for he was very lame and infirm, and went home: some little time afterwards, he returned to the same coffee-house, on purpose to acquaint the woman who kept it, that she had given him a bad half-penny, and demanded another in exchange for it. Sir James had about £40,000 per annum.

Shenstone, who found "the warmest welcome at an inn," found George's to be economical. "What do you think," he writes, "must be my expense, who love to pry into everything of the kind? Why, truly one shilling. My company goes to George's Coffee-house, where, for that small subscription I read all pamphlets under a three shillings' dimension; and indeed, any larger would not be fit for coffee-house perusal." Shenstone relates that Lord Oxford was at George's, when the mob, that were carrying his Lordship in effigy, came into the box where he was, to beg money of him, amongst others; this story Horace Walpole contradicts, adding that he supposes Shenstone thought that after Lord Oxford quitted his place he went to the coffee-house to learn news.

Arthur Murphy frequented George's, "where the town wits met every evening." Lloyd, the law-student, sings:

By law let others toil to gain renown!
Florio's a gentleman, a man o' the town.

He nor courts clients, or the law regarding,
Hurries from Nando's down to Covent Garden.
Yet, he's a scholar; mark him in the pit,
With critic catcall sound the stops of wit!
Supreme at George's, he harangues the throng,
Censor of style, from tragedy to song.

The Percy Coffee-house, Rathbone-place, Oxford-street, no longer exists; but it will be kept in recollection for its having given name to one of the most popular publications of its class, namely, the "Percy Anecdotes," by Sholto and Reuben Percy, Brothers of the Benedictine Monastery of Mont Benger," in forty-four parts, commencing in 1820. So said the title pages, but the names and the locality were *supposé*. Reuben Percy was Thomas Byerly, who died in 1824; he was the brother of Sir John Byerley, and the first editor of the *Mirror*, commenced by John Limbird, in 1822. Sholto Percy was Joseph Clinton Robertsen, who died in 1852; he was the projector of the *Mechanics' Magazine*, which he edited from its commencement to his death. The name of the collection of Anecdotes was not taken, as at the time supposed, from the popularity of the "Percy Reliques,' but from the Percy Coffee-house, where Byerley and Robertson were accustomed to meet to talk over their joint work. The *idea* was, however, claimed by Sir Richard Phillips, who stoutly maintained that it originated in a suggestion made by him to Dr. Tilloch and Mr. Mayne, to cut the anecdotes from the many years' files of the *Star* newspaper, of which Dr. Tilloch was the editor; and Mr. Byerley assistant editor; and to the latter overhearing the suggestion, Sir Richard contested, might the "Percy Anecdotes" be traced. They were very successful, and a large sum was realised by the work.

Peele's Coffee-house, Nos. 177 and 178, Fleet-street, east corner of Fetter-lane, was one of the coffee-houses of the Johnsonian period; and here was long preserved a portrait of Dr. Johnson, on the keystone of a chimney-piece, stated to have been painted by Sir Joshua Reynolds. Peele's was noted for files of newspapers from these dates: *Gazette*, 1759; *Times*, 1780; *Morning Chronicle*, 1773; *Morning Post*, 1773; *Morning Herald*, 1784; *Morning Advertiser*, 1794; and the evening papers from their commencement. The house is now a tavern.

Coffee Literature and Ideals

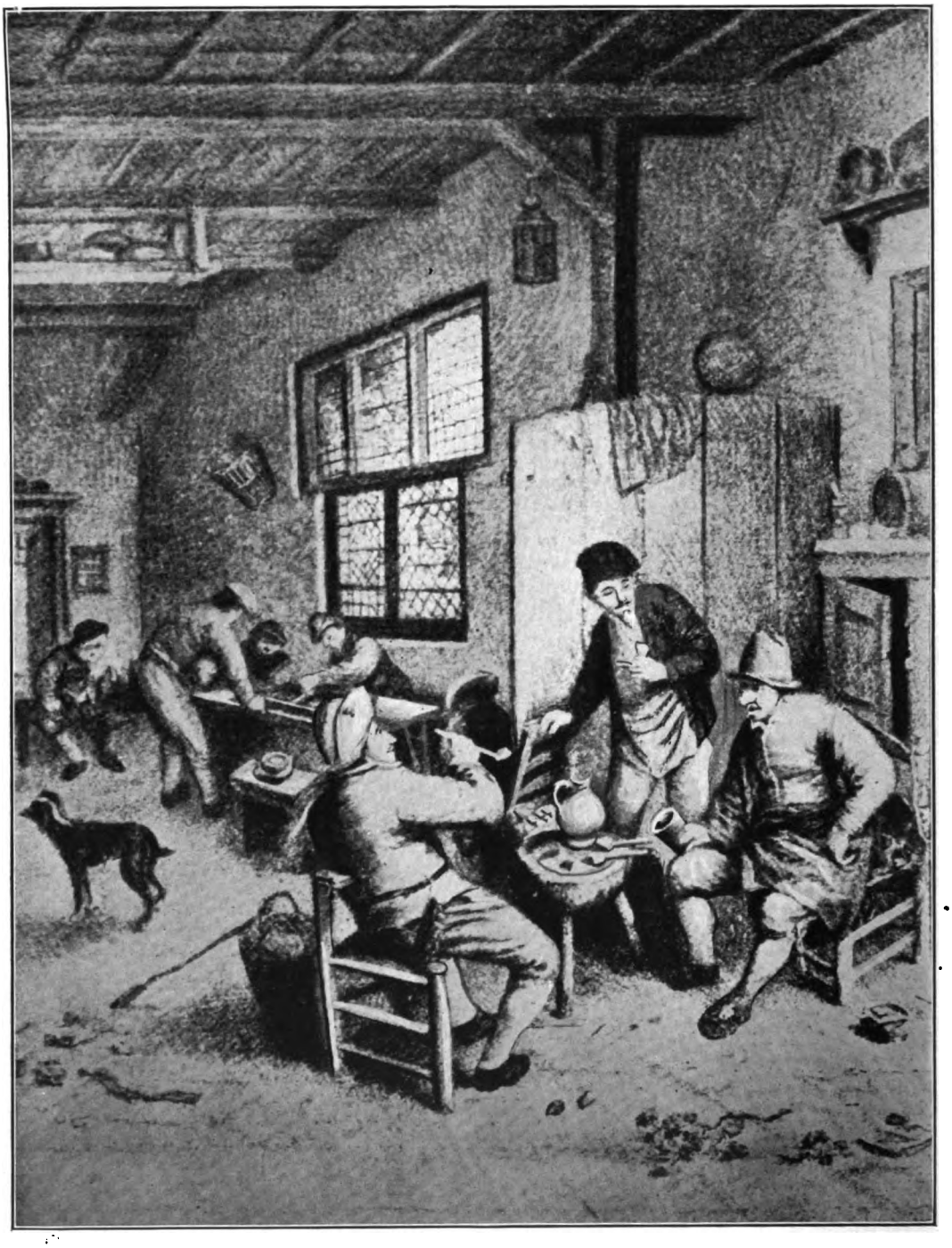
The bibliography at the end of this work will serve to indicate the nature and extent of the general literature of coffee. Not that it is complete or nearly so; it would require twice the space to include mention of all the fugitive bits of verse, essays, and miscellaneous writings in newspapers, and periodicals, dealing with the poetry and romance, history, chemistry, and physiological effects of coffee. Only the early works, and the more notable contributions of the last three centuries, are included in the bibliography; but there is sufficient to enable the student to analyze the lines of general progress.

A study of the literature of coffee shows that the French really internationalized the beverage. The English and Italians followed. With the advent of the newspaper press, coffee literature began to suffer from its competition.

The complexities of modern life suggest that coffee drinking in perfection, the esthetics, and a new literature of coffee may once more become the pleasure of a small caste. Are the real pleasures of life, the things truly worth while, only to the swift — the most efficient? Who shall say? Are not some of us, particularly in America, rather prone to glorify the gospel of work to such an extent that we are in danger of losing the ability to understand or to enjoy anything else?

Granted that this is so, coffee, already recognized as the most grateful lubricant known to the human machine, is destined to play another part of increasing importance in our national life as a kind of national shock-absorber as well. But its rôle is something more than this, surely. When life is drab, it takes away its grayness. When life is sad, it brings us solace. When life is dull, it brings us new inspiration. When we are a-weary it brings us comfort and good cheer.

The lure of coffee lies in its appeal to our finer sensibilities; and signs are not wanting that that pursuit of the long, sweet happiness that every one is seeking will lead some of us (even in big bustling America) into footpaths that end in places where coffee will offer much of its pristine inspiration and charm. It probably will not be a coffee house anything like that of the long ago, but perhaps it will be a kind of modernized coffee club. Why not?



A COFFEE HOUSE IN HOLLAND, ABOUT 1650

After the etching by J. Beauvarlet from a painting by Adriaen Van Ostade (1610 - 1675), which is said to be the earliest picture of a coffee house in western Europe

Chapter XXXIII

COFFEE IN RELATION TO THE FINE ARTS

How coffee and coffee drinking have been celebrated in painting, engraving, sculpture, caricature, lithography, and music — Epics, rhapsodies, and cantatas in praise of coffee — Beautiful specimens of the art of the potter and the silversmith as shown in the coffee service of various periods in the world's history — Some historical relics

COFFEE has inspired the imagination of many poets, musicians, and painters. In the seventeenth and eighteenth centuries those whose genius was dedicated to the fine arts seem to have fallen under its spell and to have produced much of great beauty that has endured. To the painters, engravers, and caricaturists of that period we are particularly indebted for pictures that have added greatly to our knowledge of early coffee customs and manners.

Adriaen Van Ostade (1610-1685), the Dutch genre painter and etcher, pupil of Frans Hals, in his "Dutch Coffee House" (1650), shows the genesis of the coffee house of western Europe about the time it still partook of some of the tavern characteristics. Coffee is being served to a group in the foreground. It is believed to be the oldest existing picture of a coffee house. The illustration is after the etching by J. Beauvarlet in the graphic collection at Munich.

William Hogarth (1697-1764), the famous English painter and engraver of satirical subjects, chose the coffee houses of his time for the scenes of a number of his social caricatures. In his series, "Four Times of the Day," which throws a vivid light on the street life of London of the period of 1738, we are shown Covent Garden at 7:55 A. M. by the clock on St. Paul's Church. A prim maiden lady (said to have been sketched from an elderly relation of the artist, who cut him out of her will) on her way home from early service, accompanied by a shivering foot-boy, is scandalized by the spectacle presented by some roystering blades issuing from Tom King's notorious coffee house to the right. The *beaux* are forcing their attentions upon the more comely of the market women in the foreground. Tom King was a scholar at Eton before he began his ignoble career. At the date of this picture, it is thought he had been succeeded by his widow, Moll King, also of scandalous repute.

Scene VI of the "Rake's Progress" by Hogarth is laid at the club in White's chocolate (coffee) house, which Dr. Swift described as "the common rendezvous of infamous sharpers and noble cullies." The rake has lost all his recently acquired wealth, pulls off his wig and flings himself upon the floor in a paroxysm of fury and execration. In allusion to the burning of White's in 1733, flames are seen bursting from the wainscot, but the pre-occupied gamblers take no heed, even of the watchman crying "Fire!" To the left is seated a highwayman, with horse pistol and black mask in a skirt pocket of his coat. He is so engrossed in his thoughts that he does not notice the boy at his side offering a glass of liquor on a tray. The scene well depicts the low estate to which White's had fallen. It recalls a bit of dialogue from Farquhar's

IN THE CLUB AT WHITE'S COFFEE HOUSE, 1733
From a painting in the series, "The Rake's Progress," by William Hogarth

Beaux' Stratagem (act III, scene 2), where Aimwell says to Gibbet, who is a highwayman: "Pray, sir, ha'nt I seen your face at Will's Coffee House?" "Yes sir, and at White's, too," answers the highwayman.

After the fire, the club and chocolate house were removed to Gaunt's coffee house. The removal was thus announced in the *Daily Post* of May 3:

> This is to acquaint all noblemen and gentlemen that Mr. Arthur having had the misfortune to be burnt out of White's Chocolate House is removed to Gaunt's Coffee House, next the St. James Coffee House in St. James Street, where he humbly begs they will favour him with their company as usual.

Alessandro Longhi (1733 - 1813) the Italian painter and engraver, called the Venetian Hogarth, in one of his pictures presenting life and manners in Venice during the years of her decadence, shows Goldoni, the dramatist, as a visitor in a café of the period, with a female mendicant soliciting alms.

In the Louvre at Paris hangs the "Petit Déjeuner" by François Boucher (1703 - 1770), famous court painter of Louis XV. It shows a French breakfast-room of the period of 1744, and is interesting because it illustrates the introduction of coffee into the home; it shows also the coffee service of the time.

In Van Loo's portrait of Madame de Pompadour, second mistress and political adviser of Louis XV of France, the coffee service of a later period of the eighteenth century appears. The Nubian servant is shown offering the marquise a demi-tasse which has just been poured from the covered oriental pot which succeeded the original Arabian-Turkish boiler, and was much in vogue at the time.

Coffee and Madame du Barry (or would

TOM KING'S COFFEE HOUSE IN COVENT GARDEN, 1738
From a painting in the series, "Four Times of the Day," by William Hogarth

it be more polite to say Madame du Barry and coffee?) inspired the celebrated painting of Madame de Pompadour's successor in the affections of Louis "the well beloved." This is entitled "Madame du Barry at Versailles", and in the Versailles catalog it is described as painted by Decreuse after Drouais. Decreuse was a pupil of Gros, and painted many of the historical portraits at Versailles.

Malcolm C. Salaman, in his *French Color Prints of the XVIII Century*, referring to Dagoty's print of this picture, done in 1771, says, "the original has been attrib-

"PETIT DEJEUNER," BY BOUCHER

Showing the home coffee service of the period of 1744

uted to Francois Hubert Drouais, but there can be little doubt that the original portraiture was from the hand of the engraver (Dagoty), as the style is far inferior to Drouais." He thus describes it:

Here we see the last of Louis XV's mistresses, sitting in her bedroom in that alluring retreat of hers at Louveciennes, near the woods of Marly, as she takes her cup of coffee from her pet attendant, the little negro boy, Zamore, as the Prince de Conti had named him, all brave in red and gold. Doubtless she is expecting the morning visit of the King, no longer the handsome young gallant, but old and leaden-eyed, and puffy-cheeked; and perhaps it will be on this very morning that she will wheedle Louis, in a moment of extravagant badinage, into appointing the negro boy to be Governor of the Chateau and Pavilion of Louveciennes at a handsome salary, just as, on another day, she playfully teased the jaded old sensualist into decorating with the cordon bleu her cuisinière when it was triumphantly revealed to him that the dinner he had been praising with enthusiastic gusto was, after all, the work of a woman cook, the very possibility of which he had contemptuously doubted. But as we look at these two, the royal mistress and her little black favorite, we forget the "well beloved" and his voluptuous pleasures and indulgences, for in the shadows we see another picture, some twenty years on, when the proud unconscionable beauty, no longer *reine de la main gauche*, stands before the dreaded Tribunal of the Terror, while Zamore, the treacherous, ungrateful negro, dismissed from his service at Louveciennes and now devoted to the committee of public safety, and one of her implacable accusers, sends her shrieking to the guillotine.

The introduction of the coffee house into Europe was memorialized by Franz Schams, the genre painter, pupil of the Vienna Academy, in a beautiful picture entitled "The First Coffee House in Vienna, 1684," owned by the Austrian Art Society. A lithographic reproduction was executed by the artist and printed by Joseph Stoufs in Vienna. There are several specimens in the United States; and the illustration printed on page 48 has been made from one of these in the possession of the author.

The picture shows the interior of the Blue Bottle, where Kolschitzky opened the first coffee house in Vienna. The hero-proprietor stands in the foreground pouring a cup of the beverage from an oriental coffee pot, and another is suspended from the coffee-house sign that hangs over the fireplace. In the fire alcove a woman is pounding coffee in a mortar. Men and women in the costumes of the period are being served coffee by a Vienna *mädchen*.

COFFEE SERVICE IN THE HOME OF MADAME DE POMPADOUR — PAINTING BY VAN LOO

MADAME DU BARRY AND HER SLAVE BOY ZAMORE — PAINTING BY DECREUSE

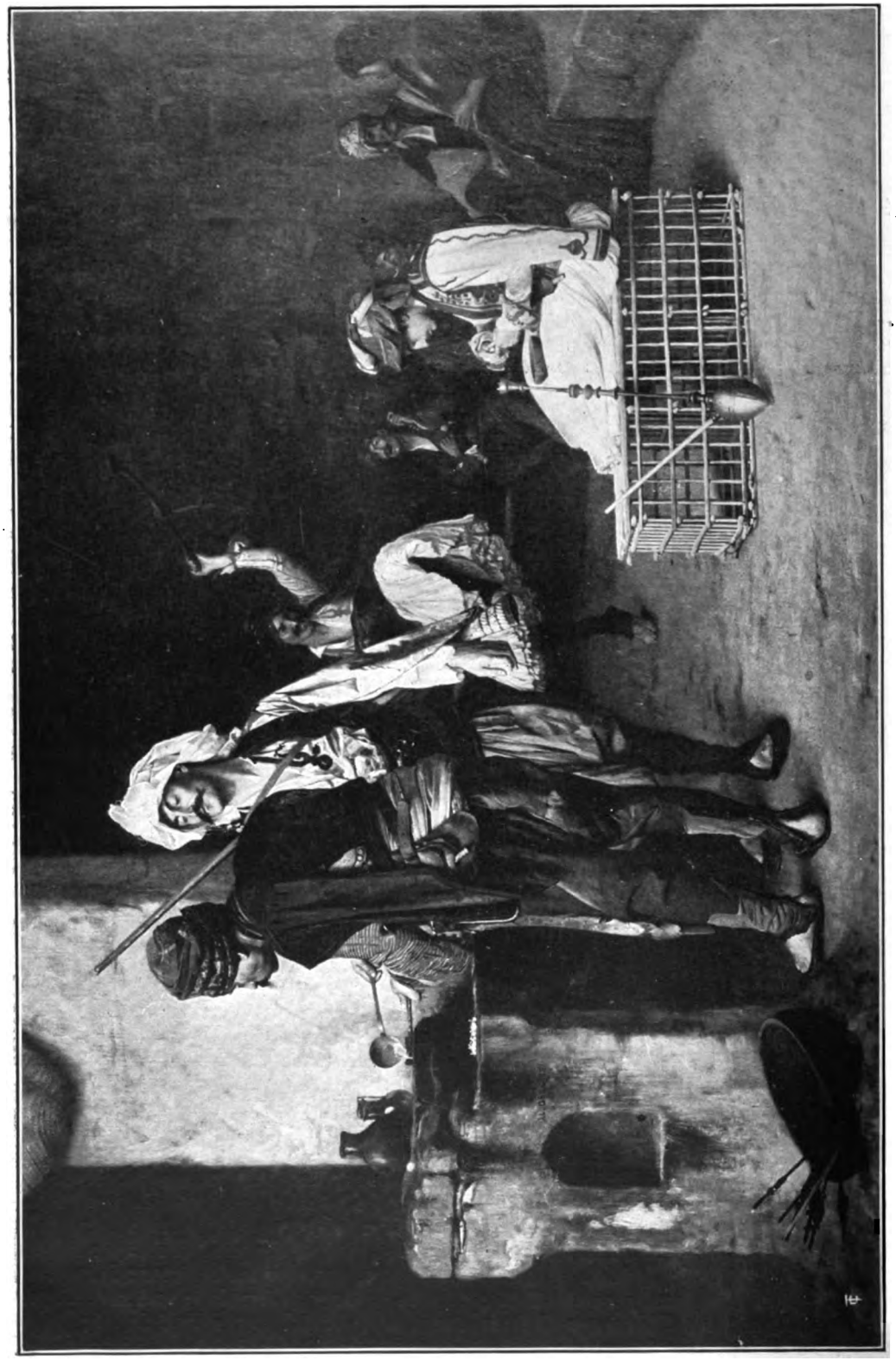
The painters Marilhat, Descamps, and de Tournemine have pictured café scenes; the first in his "Café sur une route de Syrie", which was shown at the Salon of 1844; the second in his "Café Turc", which figured at the Exposition of 1855; and the third in his "Café en Asia Mineure", which received honors at the Salon of 1859, and attracted attention at the Universal Exposition of 1867.

A decorative panel designed for the buffet at the Paris Opera House by S. Mazerolles was shown at the Exposition of 1878. A French artist, Jacquand, has painted two charming compositions; one representing the reading room, and the other the interior, of a café.

Many German artists have shown coffee manners and customs in pictures that are now hanging in well known European galleries. Among others, mention should be made of C. Schmidt's "The Sweets Shop of Josty in Berlin", 1845; Milde's "Pastor Rautenberg and His Family at the Coffee Table", 1833; and his "Manager Classen and His Family at the Afternoon Coffee Table", 1840; Adolph Menzel's "Parisian Boulevard Café", 1870; Hugo Meith's "Saturday Afternoon at the Coffee Table"; John Philipp's "Old Woman with Coffee Cup"; Friedrich Walle's "Afternoon Coffee in the Court Gardens at Munich"; Paul Meyerheim's "Oriental Coffee House"; and Peter Philippi's (Dusseldorf) "Kaffeebesuch."

At the Exposition des Beaux Arts, Salon of 1881, there was shown P. A. Ruffio's picture, "Le café vient au secours de la Muse" (Coffee comes to the aid of the Muse), in which the graceful form of an oriental ewer appears.

The "Coffee House at Cairo," a canvas by Jean Léon Gérôme (1824 - 1904) that hangs in the Metropolitan Museum of Art, New York, has been much admired. It shows the interior of a typical oriental coffee house with two men near a furnace at the left preparing the beverage; a man seated on a wicker basket about to smoke a hooka; a dervish dancing; and several persons seated against the wall in the background.



COFFEE HOUSE AT CAIRO—PAINTING BY GEROME IN THE METROPOLITAN MUSEUM, NEW YORK

The New York Historical Society acquired in 1907 from Miss Margaret A. Ingram an oil painting of the "Tontine Coffee House." It was painted in Philadelphia by Francis Guy, and was sold at a raffle, after having been admired by President John Adams. It shows lower Wall Street in 1796 - 1800, with the Tontine coffee house on the northwest corner of Wall and Water Streets, where its more famous predecessor, the Merchants coffee house, was located before it moved to quarters diagonally opposite.

Charles P. Gruppe's (*b.* 1860) painting showing General "Washington's Official Welcome to New York by City and State Officials at the Merchants Coffee House," April 23, 1789, just one week before his inauguration as first president of the United States, is a colorful canvas that has been much praised for its atmosphere and historical associations. It is the property of the author.

The art museums and libraries of every country contain many beautiful water-colors, engravings, prints, drawings, and lithographs, whose creators found inspiration in coffee. Space permits the mention of only a few.

T. H. Shepherd has preserved for us Button's, afterward the Caledonien coffee house, Great Russell Street, Covent Garden, in a water-color drawing of 1857; Tom's coffee house, 17 Great Russell Street, Covent Garden, 1857; Slaughter's coffee house in St. Martin's Lane, 1841; also, in 1857, the Lion's Head at Button's, put up by Addison and now the property of the Duke of Bedford at Woburn.

"KAFFEEBESUCH"
From the painting by Peter Philippi

"COFFEE COMES TO THE AID OF THE MUSE"
From the painting by Ruffio

Hogarth figures in the Sam Ireland collection with several original drawings of frequenters of Button's in 1730.

Thomas Rowlandson (1756 - 1827) the great English caricaturist and illustrator, has given us several fine pictures of English coffee-house life. His "Mad Dog in a Coffee House" presents a lively scene; and his water-color of "The French Coffee House" is one of the best pictures we have of the French coffee house in London as it looked during the latter half of the eighteenth century.

During the campaign in France in 1814, Napoleon arrived one day, unheralded, in a country presbytery, where the good curé was quietly turning his hand coffee-roaster. The emperor asked him, "What are you doing there, abbé?" "Sire", replied the priest, "I am doing like you. I am burning the colonial fodder." Charlet (1792 - 1845) made a lithograph of the incident.

Several French poet-musicians resorted to music to celebrate coffee. Brittany has

its own songs in praise of coffee, as have other French provinces. There are many epics, rhapsodies, and cantatas — and even a comic opera by Meilhat, music by Deffes, bearing the title, *Le Café du Roi*, produced at the Théâtre Lyrique, November 16, 1861.

Fuzelier wrote, in honor of coffee, a cantata, set to music by Bernier. This is the burden of the poet's song:

Ah coffee, what climes yet unknown,
Ignore the clear fires that thy vapors inspire!
Thou countest, in thy vast empire
Those realms that Bacchus' reign disown.
Favored liquid, which fills all my soul with delights,
Thy enchantments to life happy hours persuade,
We vanquish e'en sleep by thy fortunate aid,
Thou hast rescued the hours sleep would rob from our nights.
Favored liquid which fills all my soul with delights,
Thy enchantments to life happy hours persuade.

Oh liquid that I love,
Triumphant stream of sable,
E'en for the gods above,
Drive nectar from the table.
Make thou relentless war
On treacherous juices sly,
Let earth taste and adore
The sweet calm of the sky.

Oh liquid that I love,
Triumphant stream of sable,
E'en for the gods above,
Drive nectar from the table.

During the early vogue of the café in Paris, a *chanson*, entitled *Coffee*, reproduced here, was set to music with accompaniment for the piano by M. H. Colet, a professor of harmony at the Conservatoire. Printed in the form of a placard, and put up in cafés, it received the approbation of, and was signed by, de Voyer d'Argenson, at that time (1711) lieutenant of police. The poetry is not irreproachable. It can hardly be attributed to any of the well known poets of the time; but rather to one of those bohemian rimesters that wrote all too abundantly on all sorts of subjects. It is the development of a theory concerning the properties of coffee and the best method of making it. It is interesting to note that the uses of advertising were known and appreciated in Paris in 1711; for in the *chanson* there appears the name and address of one Vilain, a merchant, rue des Lombards, who was evidently in fashion at that period. The translation of the stanza reproduced is as follows:

"Mad Dog in a Coffee House" — Caricature by Rowlandson

NAPOLEON AND THE CURE—LITHOGRAPH BY CHARLET

COFFEE — A CHANSON

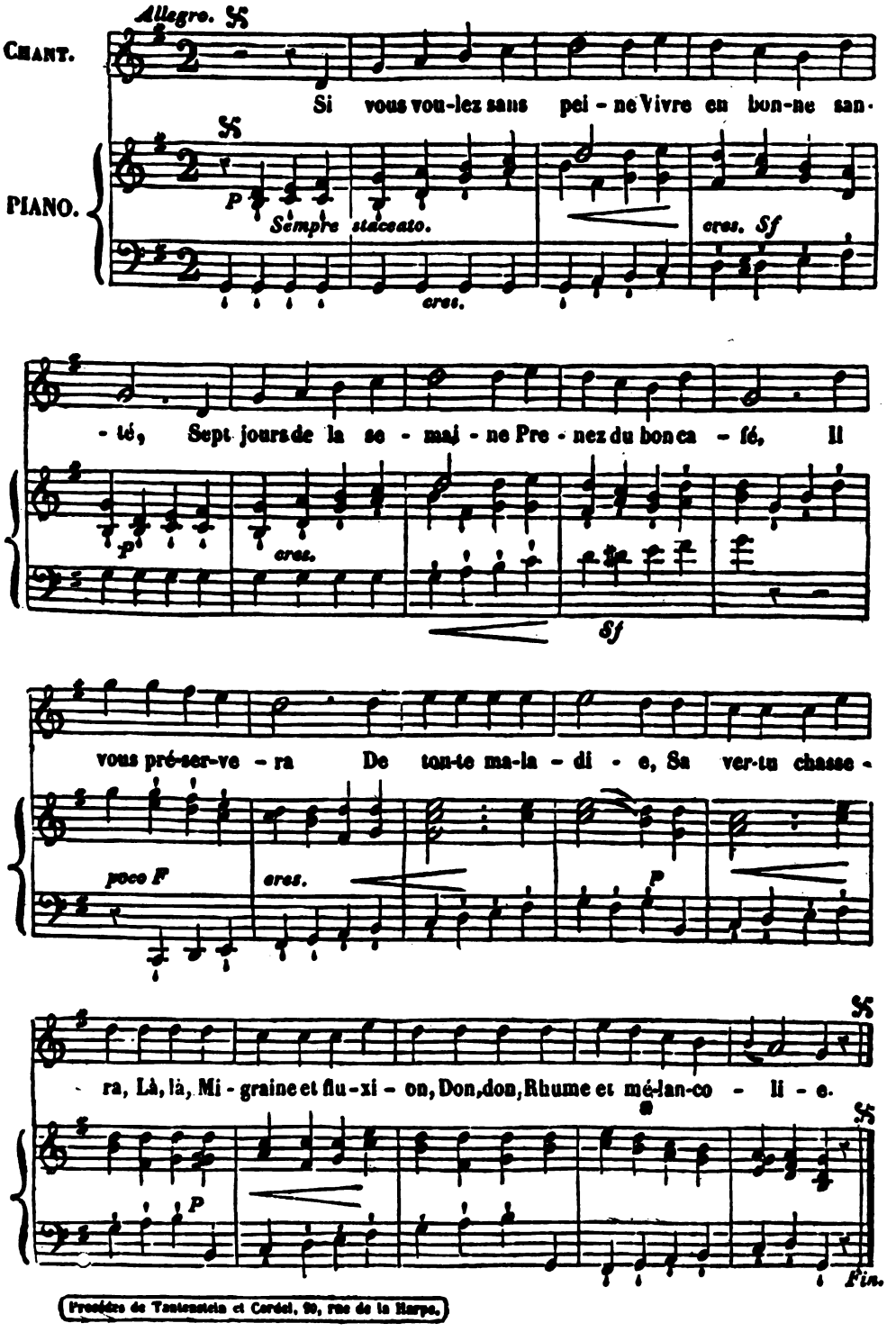
If you, with mind untroubled,
Would flourish, day by day,
Let each day of the seven
Find coffee on your tray.
It will your frame preserve from every malady,
Its virtues drive afar, la! la!
Migrain and dread catarrh — ha! ha!
Dull cold and lethargy.

The most notable contribution to the "music of coffee," if one may be permitted the expression, is the *Coffee Cantata* of Johann Sebastian Bach (1685-1750) the German organist and the most modern composer of the first half of the eighteenth century. He hymned the religious sentiment of protestant Germany; and in his *Coffee Cantata* he tells in music the protest of the fair sex against the libels of the enemies of the beverage, who at the time were actively urging in Germany that it should be forbidden women, because its use made for sterility! Later on, the government surrounded the manufacture, sale, and use of coffee with many obnoxious restrictions, as told in chapter VIII.

Bach's *Coffee Cantata* is No. 211 of the *Secular Cantatas,* and was published in Leipzig in 1732. In German it is known as *Schweigt stille, plaudert nicht* (Be silent, do not talk). It is written for soprano, tenor, and bass solos and orchestra. Bach used as his text a poem by Piccander. The cantata is really a sort of one-act operetta — a jocose production repesenting the efforts of a stern parent to check his daughter's propensities in coffee drinking, the new fashioned habit. One seldom thinks of Bach as a humorist; but the music here is written in a mock-heroic vein, the recitatives and arias having a merry flavor, hinting at what the master might have done in light opera.

The libretto shows the father Schlendrian, or Slowpoke, trying by various

LE CAFÉ, avec accompagnement de piano par M. H. COLET, professeur d'harmonie au Conservatoire.


Allegro.
CHANT.
PIANO.
Si vous vou-lez sans pei - ne Vivre en bon-ne san-
Sempre staccato.
cres.
Sf
- té, Sept jours de la se - mai - ne Pre - nez du bon ca - fé, Il
vous pré-ser-ve - ra De ton-te ma-la - di - e, Sa ver-tu chasse -
poco F
ra, Là, là, Mi - graine et flu - xi - on, Don, don, Rhume et mé-lan-co - li - e.
Fin.

Propriété de Tantenstein et Cardel, 90, rue de la Harpe.

COFFEE — A CHANSON; MUSIC BY COLET, 1711

threats to dissuade his daughter from further indulgence in the new vice, and, in the end, succeeding by threatening to deprive her of a husband. But his victory is only temporary. When the mother and the grandmother indulge in coffee, asks the final trio, who can blame the daughter?

Bach uses the spelling coffee — not *kaffee*. The cantata was sung as recently as December 18, 1921, at a concert in New York by the Society of the Friends of Music, directed by Arthur Bodanzky.

Lieschen, or Betty, the daughter, has a delightful aria, beginning, "Ah, how sweet coffee tastes — lovelier than a thousand kisses, sweeter far than muscatel wine!" the opening bars of which are reproduced on page 598.

As the text is not long, it is printed here in its entirety.

CHARACTERS

MESSENGER AND NARRATOR.....*Tenor*
SLOWPOKE .....*Bass*
BETTY, DAUGHTER TO SLOWPOKE.....*Soprano*

TENOR (*Recitative*): Be silent, do not talk, but notice what will happen! Here comes old Slowpoke with his daughter Betty. He's grumbling like a common bear — just listen to what he says.

(*Enter* SLOWPOKE *muttering*): What vexatious things one's children are! A hundred thousand naughty ways! What I tell my daughter Betty might as well be told to the moon! (*Enter* BETTY.)

SLOWPOKE (*Recitative*): You naughty child, you mischievous girl, oh when can I have my way — give up your coffee!

BETTY: Dear father, do not be so strict! If I can't have my little demi-tasse of coffee three times a day, I'm just like a dried up piece of roast goat!

BETTY (*Aria*): Ah! How sweet coffee tastes! Lovelier than a thousand kisses, sweeter far than muscatel wine! I must have my coffee, and if any one wishes to please me, let him present me with — coffee!

SLOWPOKE (*Recitative*): If you won't give up coffee, young lady, I won't let you go to any wedding feasts — I won't even let you go walking!

BETTY: O yes! Do let me have my coffee!

SLOWPOKE: What a little monkey you are, anyway! I will not let you have any whalebone skirts of the present fashionable size!

BETTY: Oh, I can easily fix *that!*

SLOWPOKE: But I won't let you stand at the window and watch the new styles!

BETTY: That does n't bother me, either. But be good and let me have my coffee!

SLOWPOKE: But from my hands you'll get no silver or gold ribbon for your hair!

BETTY: Oh well! so long as I have what does satisfy me!

STATUE OF KOLSCHITZKY IN VIENNA

SLOWPOKE: You wretched Betty, you! You won't give in to me?

SLOWPOKE (*Air*): Oh these girls — what obstinate dispositions they do have! They certainly are not easy to manage! But if one hits the right spot — oh well, one *may* succeed!

SLOWPOKE, *with an air of being sure of success this time* (*Recitative*): Now please do what father says.

BETTY: In everything, except about coffee.

SLOWPOKE: Well, then, you must make up your mind to do without a husband.

BETTY: Oh — yes? Father, a husband?

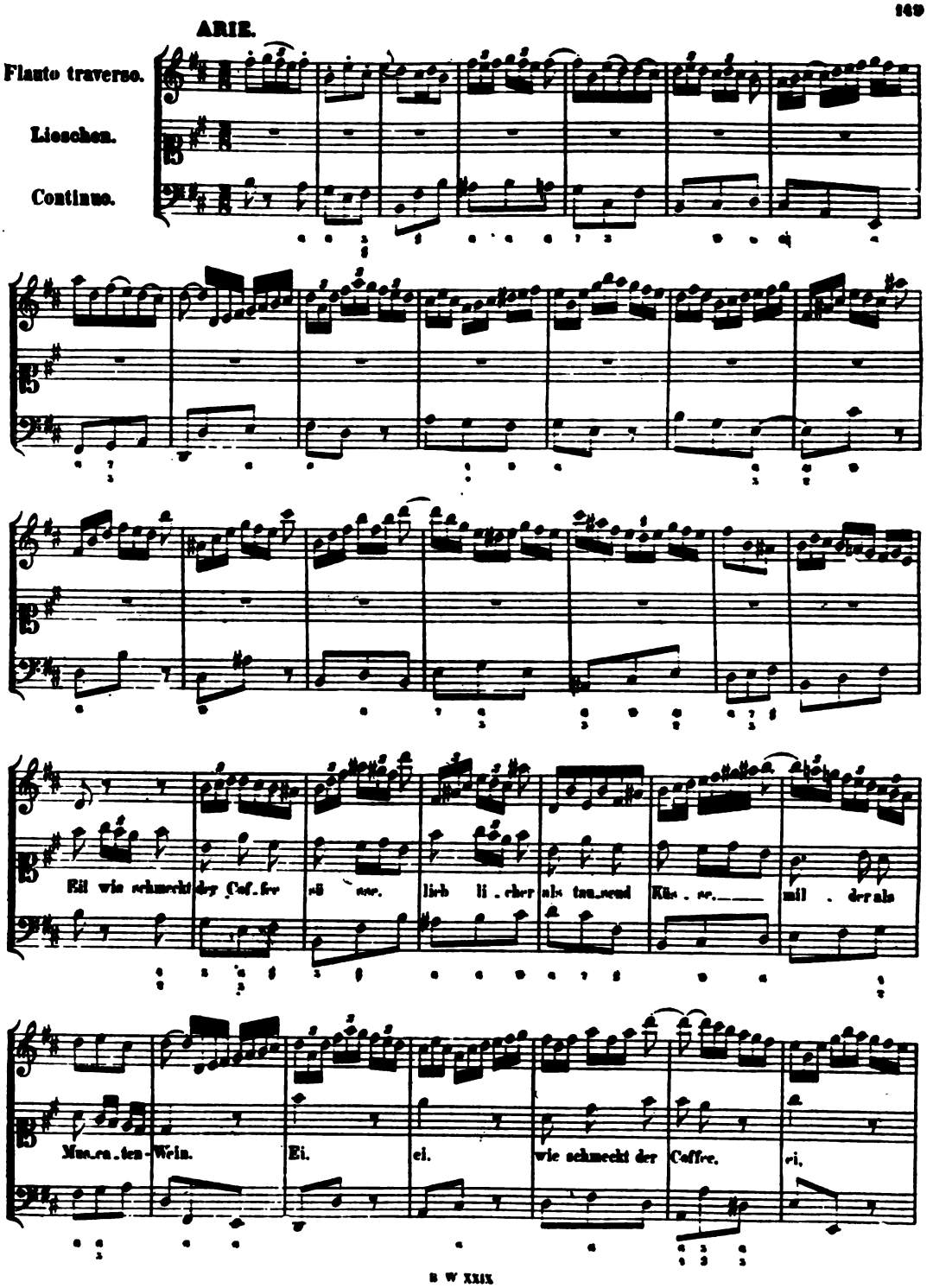
SLOWPOKE: I swear you can't have him —

BETTY: Till I give up coffee? Oh well — coffee — let it be forgotten — dear father — I will not drink — none!

SLOWPOKE: *Then* you can have one!

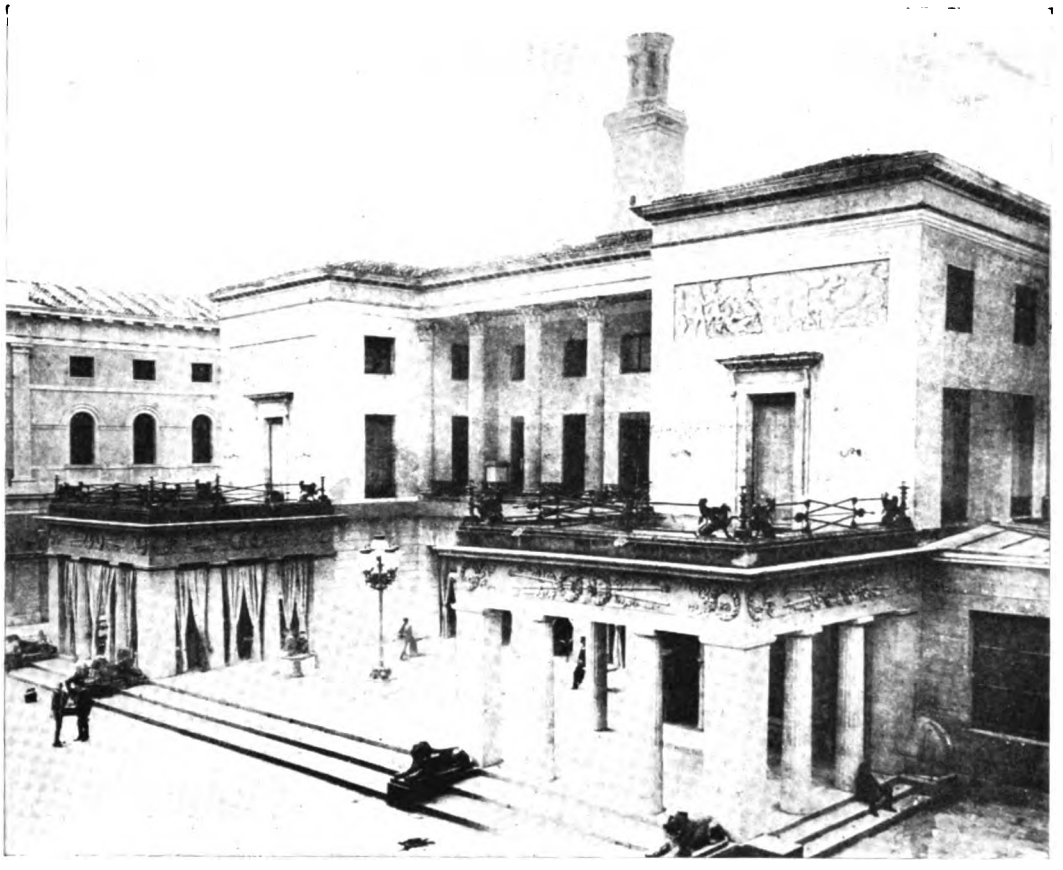
BETTY (*Aria*): To-day, dear father — do it *to-day*. (*He goes out.*) Ah, a husband! Really this suits me exactly! When they know I must have coffee, why, before I go to bed to-night I can have a valiant lover! (*Goes out.*)

TENOR (*Recitative*): Now go hunt up old Slowpoke, and just watch him get a husband for his daughter — for Betty is secretly making it known "that no wooer may come to the house, unless he promises me himself, and has it put in the marriage contract that he will allow me to make coffee whenever I will!"



"Ah, How Sweet Coffee Tastes — Lovelier Than a Thousand Kisses, Sweeter Far than Muscatel Wine!"

Opening bars of Betty's aria in Bach's *Coffee Cantata*, 1732



THE MOST BEAUTIFUL COFFEE HOUSE IN THE WORLD
The Caffè Pedrocchi in Padua, Italy, empire period, erected by the poor lemonade vender and coffee seller, Antonio Pedrocchi.

(*Enter* SLOWPOKE *and* BETTY, *singing — as chorus — with* TENOR.)

TRIO: The cat will not give up the mouse, old maids continue "coffee-sisters!" — the mother loves her drink of coffee — grandma, too, is a coffee fiend — *who* now will blame the daughter!

Research has discovered only one piece of sculpture associated with coffee — the statue of the Austrian hero Kolschitzky, the patron saint of the Vienna coffee houses. It graces the second-floor corner of a house in the Favoriten Strasse, where it was erected in his honor by the Coffee Makers' Guild of Vienna. The great "brother-heart" is shown in the attitude of pouring coffee into cups on a tray from an oriental service pot.

The celebrated Caffè Pedrocchi, the center of life in the city of Padua, Italy, in the early part of the nineteenth century, is one of the most beautiful buildings erected in Italy. Its use is apparent at first glance. It was begun in 1816, opened June 9, 1831, and completed in 1842. Antonio Pedrocchi (1776-1852), an obscure Paduan coffee-house keeper, tormented by a desire for glory, conceived the idea of building the most beautiful coffee house in the world, and carried it out.

Artists and craftsmen of all ages since the discovery of coffee have brought their genius into play to fashion various forms of apparatus associated with the preparation of the coffee drink. Coffee roasters and grinders have been made of brass, silver, and gold; coffee mortars, of bronze; and coffee making and serving pots, of beautiful copper, pewter, pottery, porcelain, and silver designs.

In the Peter collection in the United States National Museum there is to be seen a fine specimen of the Bagdad coffee pot made of beaten copper and used for making and serving; also, a beautiful Turkish coffee set. In the Metropolitan Museum in

COFFEE GRINDER SET WITH JEWELS
In the Metropolitan Museum of Art, New York

New York there are some beautiful specimens of Persian and Egyptian ewers in faience, probably used for coffee service. Also, in American and continental museums are to be seen many examples of seventeenth-century German, Dutch, and English bronze mortars and pestles used for "braying" coffee beans to make coffee powder.

A very beautiful specimen of the oriental coffee grinder, made of brass and teakwood, set with red and green glass jewels, and inlaid in the teakwood with ivory and brass, is at the Metropolitan. This is of Indo-Persian design of the nineteenth century.

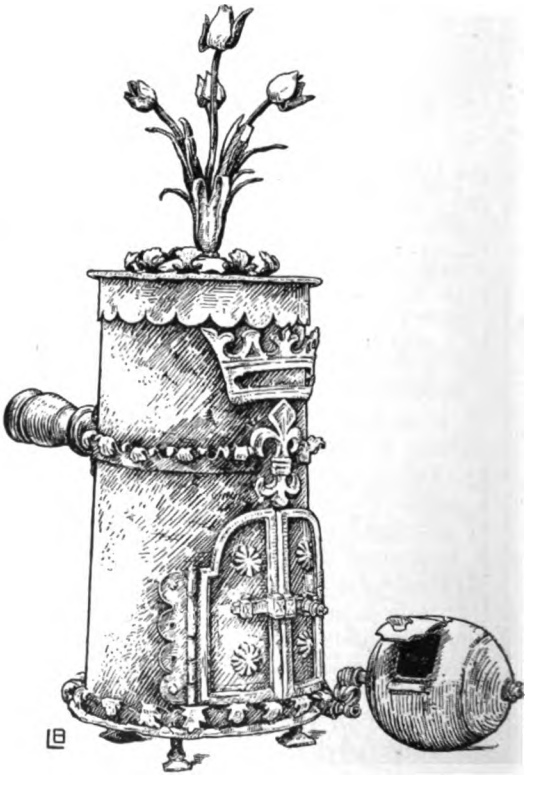
The Metropolitan Museum shows also many specimens of pewter coffee pots used in India, Germany, Holland, Belgium, France, Russia, and England in the seventeenth and eighteenth centuries.

One can guess at the luxuriousness of the coffee pots in use in France throughout the eighteenth century by noting that from March 20, 1754, to April 16, 1755, Louis XV bought no fewer than three gold coffee pots of Lazare Duvaux. They had carved branches, and were supplied with "chafing dishes of burnished steel" and lamps for spirits of wine. They cost, respectively, 1,950, 1,536, and 2,400 francs. In the "inventory of Marie-Josephe de Saxe, Dauphine of France", we note, too, a "two cup coffee pot of gold with its chafing dish for spirits of wine in a leather case."

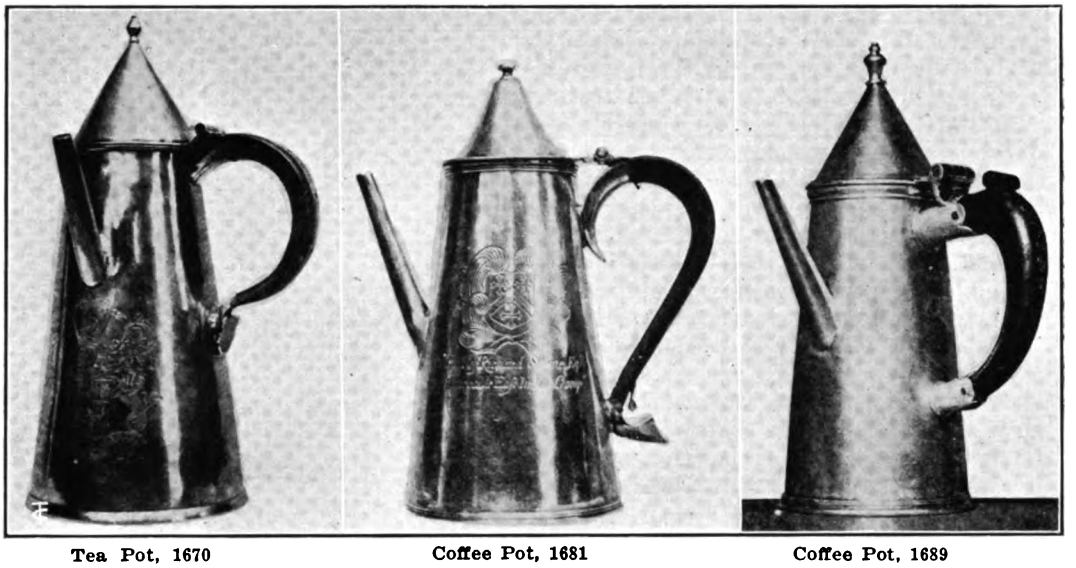
The Italian wrought-iron coffee roaster of the seventeenth century was often a work of art. The specimen illustrated is rich in decorative motifs associated with the best in Florentine art.

Madame de Pompadour's inventory disclosed a "gold coffee mill, carved in colored gold to represent the branches of a coffee tree." The art of gold, which sought to embellish everything, did not disdain these homely utensils; and one may see at the Cluny Museum in Paris, among many mills of graceful form, a coffee mill of engraved iron dating from the eighteenth century, upon which are represented the four seasons. We are told, however, that it graced the "sale after the death of Mme. de Pompadour", which, of course, makes it much more valuable.

"The tea pot, coffee pot and chocolate pot first used in England closely resembled each other in form", says Charles James Jackson in his *Illustrated History of Eng-*



ITALIAN WROUGHT-IRON COFFEE ROASTER
Courtesy of *Edison Monthly*



Tea Pot, 1670 Coffee Pot, 1681 Coffee Pot, 1689

SEVENTEENTH-CENTURY TEA POTS AND COFFEE POTS

lish Plate, "each being circular in plan, tapering towards the top, and having its handle fixed at a right angle with the spout."

He says further:

The earliest examples were of oriental ware and the form of these was adopted by the English plate workers as a model for others of silver. It apparently was not until after both tea and coffee had been used for several years in this country [England] that the tea pot was made proportionately less in height and greater in diameter than the coffee pot. This distinction, which was probably due to copying the forms of Chinese porcelain tea pots, was afterwards maintained, and to the present day the difference between the tea pot and the coffee pot continued to be mainly one of height.

The coffee pot illustrated (1681) formerly belonged to the East India Company, and is preserved in the Victoria and Albert Museum. It is almost identical with a tea pot (1670) in the same museum, except that its straight spout is fixed nearer to the base, as is its leather-covered handle, which, with the sockets into which it fits, forms a long recurving scroll fixed opposite to and in line with the spout. Its cover, which is hinged to the upper handle socket, is high like that of the 1670 teapot; but instead of the straight outline of that cover, this is slightly waved and surmounted by a somewhat flat button-shaped knob. Engraved on the body is a shield of arms, a chevron between three crosses fleury, surrounded by tied feathers. The inscription is, "The Guift of Richard Sterne Eq to ye Honorable East India Compa."

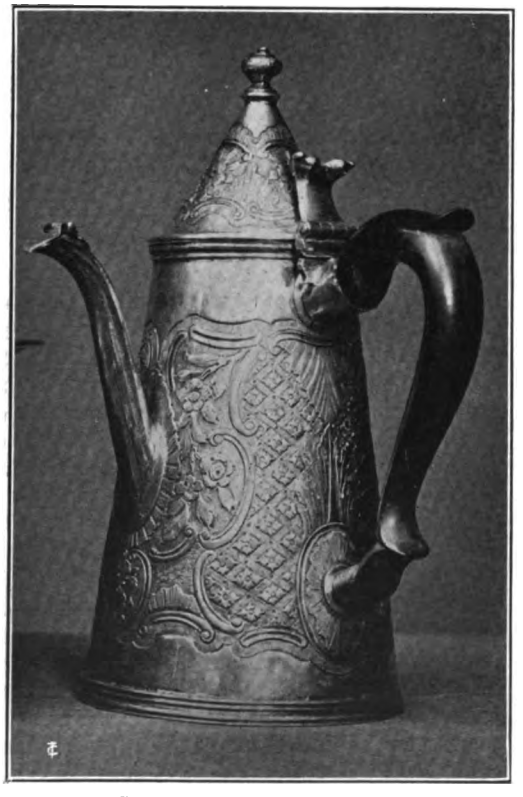
This pot is nine and three-quarters inches in height by four and seven-eighths inches in diameter at the base; it bears the London hall-marks of 1681 - 82 and the maker's mark "G. G." in a shaped shield, thought by Jackson to be George Garthorne's mark.

The 1689 coffee pot illustrated is the property of King George V. It bears the London hall-marks of 1689 - 90, and the mark of Francis Garthorne. Its tall, round body tapers toward the top, and has applied moldings on the base and rim. Its spout is straight and tapers upward to the level of the rim of the pot. Its handle is of ebony, crescent-shaped, and riveted into two sockets fixed at a right angle with the spout. The lid is a high cone surmounted by a small vase-shaped finial, and is hinged to the upper socket of the handle. On no part of the pot is there any ornamentation other than the royal cipher of King William III and Queen Mary, which is engraved on the reverse side of the body. This example, which measures nine inches in height to the top of its cover, resembles very closely in form the East India Company's tea-pot just referred to; but as teapots with much lower bodies appear to have come into fashion before 1689, this pot was probably used as a coffee pot from the first.

The 1692 coffee pot of lantern shape is

the property of H. D. Ellis, and has its spout curved upward at the top, being furnished with a small, hinged flap and a scroll-shaped thumb-piece attached to the rim of the cover. The body and cover were originally quite plain, the embossing and chasing with symmetrical rococo decoration being added later, probably about 1740. Jackson says the wooden handle is not the original one, which was probably C-shaped. The pot bears the usual London hall-marks for the year 1692 and the maker's mark is "G G" upon a shaped shield, a mark recorded upon the copper plate belonging to the Goldsmiths' company, which Mr. Cripps thinks was that of George Garthorne. The characteristics of this lantern shaped coffee pot are:

1. The straight sides, so rapidly tapering from the base upward that in a height of only six inches the base diameter of four and three-eighths inches tapers to a diameter of no more than two and one-half inches at the rim.
2. The nearly straight spout, furnished with a flap or shutter.
3. The true cone of the lid.
4. The thumb-piece, which is a familiar feature upon the tankards of the period.



LANTERN COFFEE POT, 1692

FOLKINGHAM POT, 1715-16

5. The handle fixed at right angles to the spout.

Mr. Ellis, in a paper before the Society of Antiquaries[1] on the earliest form of coffee pot, says:

If coffee was first introduced into this country by the Turkey merchants, nothing is more probable than that those who first brought the berry, brought also the vessel in which it was to be served. Such a vessel would be the Turkish ewer whose shape is familiar to us, the same today as two hundred years ago, for in the East things are slow to change. And throughout the reign of the second Charles, so long as the extended use of coffee in the houses of the people was retarded by the opposition of the Women of England, and by the scarcely less powerful influence of the King's Court, the small requirements of a mere handful of coffee-houses would be easily met by the importation of Turkish vessels. Reference to the coffee-house keepers' tokens in the Beaufoy collection in the Guildhall Museum shows that many of the traders of 1660-1675 adopted as their trade sign a hand pouring coffee from a pot. This pot is invariably of the Turkish ewer pattern. It is true that there is nothing to show that the Turks themselves ever served coffee from the ewer, but it is scarcely conceivable that the English coffee-house keepers should have adopted as their trade sign, their pictorial advertisement, so to speak, a vessel which had no connection with the commodity in which they dealt, and which would convey no meaning associated with coffee to the public. But as soon as the extended use of the beverage

[1] *Proceedings: Second Series*, 1899 (vol. xvii: no. 2; p. 390).

WASTELL POT, 1720-21

created a demand which stimulated a home manufacture of coffee-pots, a new departure is apparent. The undulating outlines beloved by the Orientals, bowed as their scimitars, curvilinear as their graceful flowing script, do not commend themselves to the more severe Western taste of the period which had then declared its preference for sweet simplicity in silversmiths' work, such as we see in the basons, cups, and especially the flat-topped tankards of that day. The beauty of the straight line had asserted its power, and fashion felt its sway. Such was the feeling that produced the coffee-pot of 1692, the straight lines of which continued in vogue until the middle of the following century, when a re-action in favour of bulbous bodies and serpentine spouts set in.

Some of the more notable of the coffee-house-keepers' tokens in the Guildhall Museum were photographed for this work. They are described and illustrated in chapter X.

There are illustrated other silver coffee pots in the Victoria and Albert Museum, by Folkingham (1715-16), and by Wastell (1720-21), the latter pot being octagonal.

There is illustrated also a design in tiles that were let into the wall of an ancient coffee house in Brick Lane, Spitalfields, known as the "Dish of Coffee Boy" in the catalog of the collection of London antiquities in the Guildhall Museum. Mr. Ellis thinks this belongs to a period a little earlier, but certainly not later, than 1692; the coffee pot represented being exactly of the lantern shape. It is an oblong sign of glazed Delft tiles, decorated in blue, brown, and yellow, representing a youth pouring coffee. Upon a table, by his side, are a gazette, two pipes, a bowl, a bottle, and a mug; above, on a scroll, is, "dish of coffee boy."

Modifications of the lantern began to appear with great rapidity in England. In the coffee pot of Chinese porcelain, illustrated, probably made in China from an English model a few years later than the 1692 pot, Mr. Ellis observes that "the spout has already lost its straightness, the extreme taper of the body is diminished, and the lid betrays the first tendency to depart from the straightness of the cone to the curved outline of the dome." He adds:

These variations rapidly intensified, and at the commencement of the eighteenth century we find the body still less tapering and the lid has become a perfect dome. As we approach the end of Queen Anne's reign the thumb piece disappears and the handle is no longer set on at right angles to the spout. Through the reign of George I but little modification took place, save that the taper of the body became less and less. In the Second George's time we find the taper

"DISH OF COFFEE BOY" DESIGN IN DELFT TILES
1692

CHINESE PORCELAIN COFFEE POT
Late seventeenth century

has almost entirely disappeared, so that the sides are nearly parallel, while the dome of the lid has been flattened down to a very low elevation above the rim. In the second quarter of the eighteenth century the pear shaped coffee pot was the vogue. In the earlier years of George III, when many new and beautiful designs in silversmiths' work were created, a complete revolution in coffee-pots takes place, and the flowing outlines of the new pattern recall the form of the Turkish ewer, which had been discarded nearly one hundred years previously.

The evolution is shown by illustrations of Lord Swaythling's pot of 1731; the coffee jug of 1736; the Vincent pot of 1738; the Viscountess Wolseley's coffee pot of copper plated with silver; the Irish coffee pot of 1760; and the silver coffee pots of 1773 - 76 and of 1779 - 80 (see illustrations on pages 604, 605 and 607).

There are illustrated in this connection specimens of coffee pots in stoneware by Elers (1700), and in salt glaze by Astbury, and another of the period about 1725. These are in the department of British and medieval antiquities of the British Museum, where are to be seen also some beautiful specimens of coffee-service pots in

Vincent Pot, Hall-marked, London, 1738 — Lord Swaythling's Pot, 1731

SILVER COFFEE POTS, EARLY EIGHTEENTH CENTURY
From Jackson's "Illustrated History of English Plate"

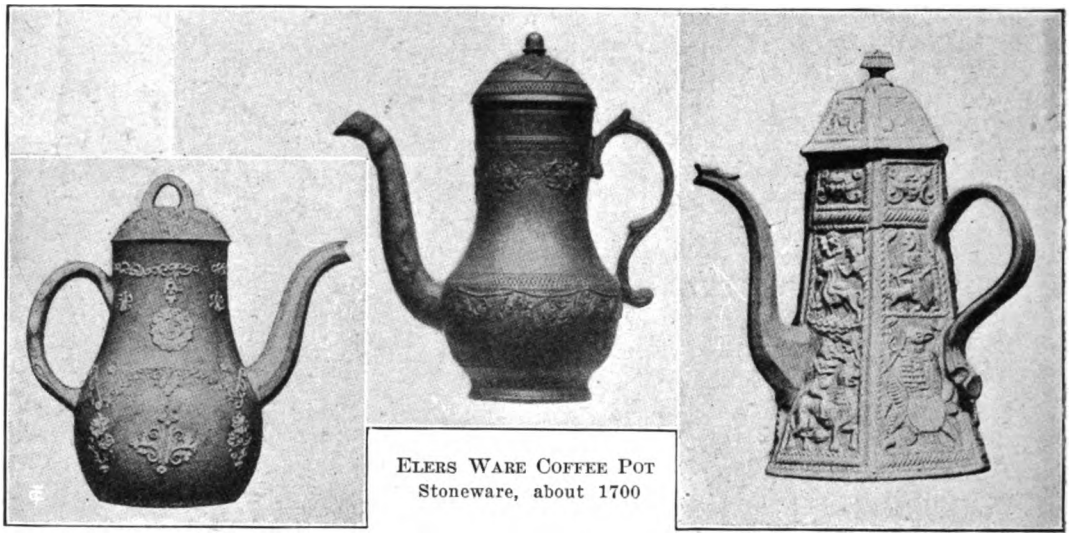
IRISH COFFEE POT, 1760
Hall-marked Dublin; the property of Col. Moore-Brabazon

VISCOUNTESS WOLSELEY'S COFFEE POT

A SCOFIELD POT OF 1779 - 80

COFFEE JUG, 1736

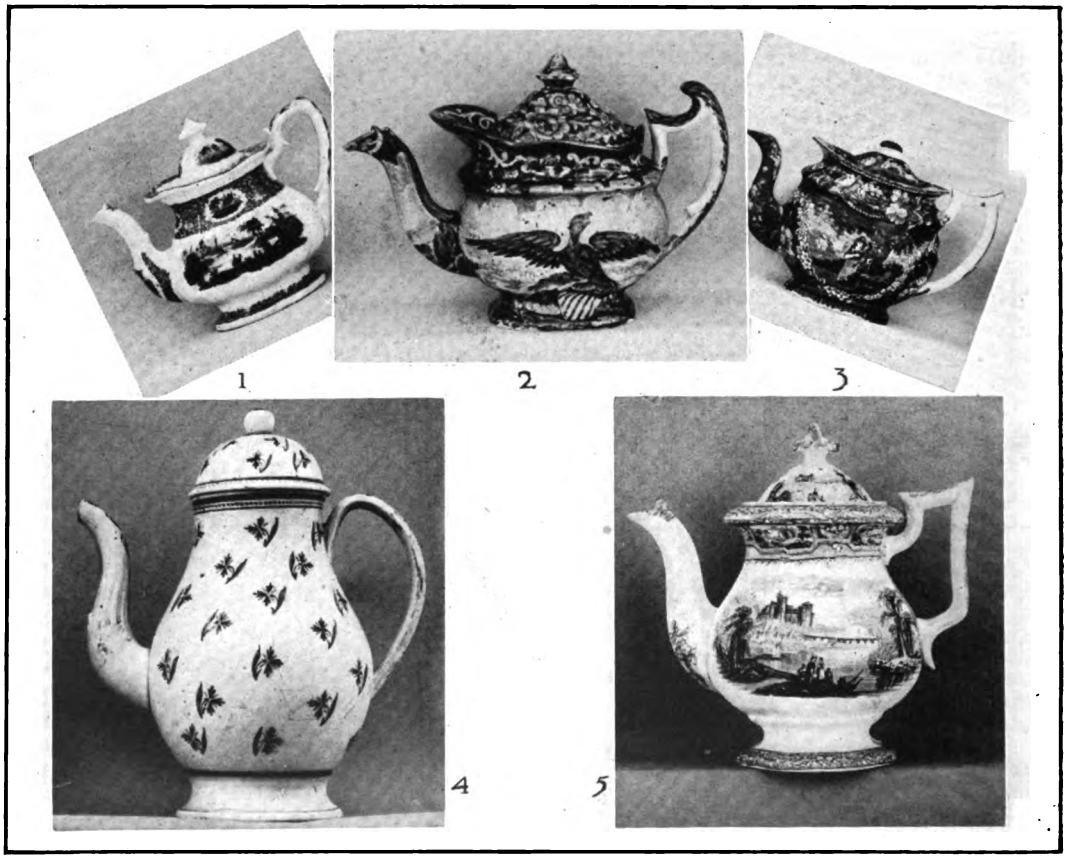
SILVER COFFEE POTS OF THE EIGHTEENTH CENTURY



SALT-GLAZE POT
By John Astbury

ELERS WARE COFFEE POT
Stoneware, about 1700

SALT-GLAZE POT
About 1725



POTS IN POTTERY AND PORCELAIN 18TH TO 20TH CENTURIES

1 — Staffordshire; 2 — English, eighteen to twentieth centuries; 3 — English, blue printed ware, eighteenth to nineteenth centuries; 4 — Leeds, 1760-1790; 5 — Staffordshire, nineteenth to twentieth centuries

SILVER COFFEE POTS, LATE EIGHTEENTH CENTURY
Left, 1776-77. Right, 1773-4.

Whieldon ware, and in Wedgwood's jasper ware.

Illustrated, too, are some beautiful examples of the art of the potter, applied to coffee service, as found in the Metropolitan Museum, where they have been brought from many countries. Included are Leeds and Staffordshire examples of the eighteenth, nineteenth, and twentieth centuries; a Sino-Lowestoft pot of the eighteenth-nineteenth centuries; an Italian (*capodimonte*) pot of the eighteenth century; German pots of the eighteenth and nineteenth centuries; a Vienna coffee pot of the eighteenth century; a French (*La Seine*) coffee pot of 1774-1793, a Sèvres pot of 1792-1804; and a Spanish eighteenth-century coffee pot decorated in copper luster.

At the Metropolitan may be seen also Hatfield and Sheffield-plate pots of the eighteenth and nineteenth centuries; and many examples of silver tea and coffee service and coffee pots by American silversmiths.

Silver tea pots and coffee pots were few in America before the middle of the eighteenth century. Early coffee-pot examples were tapering and cylindrical in form, and later matched the tea pots with swelling drums, molded bases, decorated spouts, and molded lids with finials.

From notes by R. T. Haines Halsey and John H. Buck, collected by Florence N. Levy and woven into an introduction to the Metropolitan Museum's art exhibition catalog for the Hudson-Fulton celebration of 1909, we learn that:

> The first silver made in New England was probably fashioned by English or Scotch emigrants who had served their time abroad. They were followed by craftsmen who were either born here, or, like John Hull, arriving at an early age, learned their trade on this side.
>
> In England it was required that every master goldsmith should have his mark and set it upon his work after it was assayed and marked with the king's mark (hall-mark) testifying to the fineness of the metal.

SINO-LOWESTOFT, EIGHTEENTH TO NINETEENTH CENTURIES

ITALIAN CAPODIMONTE, EIGHTEENTH CENTURY

LA SEINE, 1774 SEVRES, 1792 GERMAN POTS, EIGHTEENTH CENTURY

PORCELAIN POTS IN THE METROPOLITAN MUSEUM, NEW YORK

The Colonial silversmiths marked their wares with their initials, with or without emblems, placed in shields, circles, etc., without any guide as to place of manufacture or date. After about 1725 it was the custom to use the surname, with or without an initial, and sometimes the full name. Since the establishment of the United States the name of the town was often added and also the letters D or C in a circle, probably meaning dollar or coin, showing the standard or coin from which the wares were made.

In the New York colony there were evolved silver tea pots of a unique design, that was not used elsewhere in the colonies. Mr. Halsey says they were used indiscriminately for both tea and coffee. In style they followed, to a certain extent, the squat pear-shaped tea pots of the period of 1717-18 in England, but had greater height and capacity.

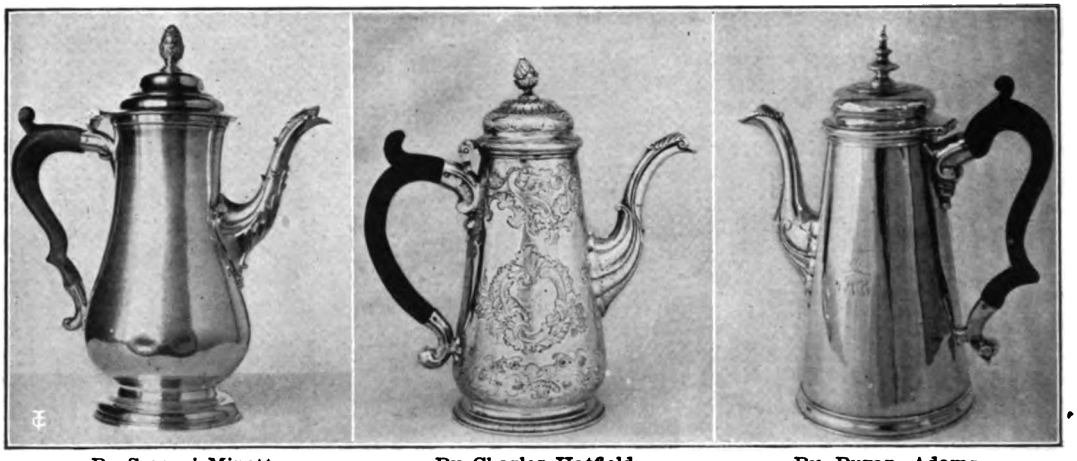
The colonial silversmiths wrought many beautiful designs in coffee, tea, and chocolate pots. Fine specimens are to be seen in the Halsey and Clearwater loan collections in the Metropolitan Museum. Included in the Clearwater collection is a coffee pot by Pygan Adams (1712-1776); and recently, there was added a coffee pot by Ephraim Brasher, whose name appears in the *New York City Directory* from 1786 to 1805. He was a member of the Gold and Silversmiths' Society, and he made the die for the famous gold doubloon, known by his name, a specimen of which recently sold in Philadelphia for $4,000. His brother, Abraham Brasher, who was an officer in the continental army, wrote many popular ballads of the Revolutionary period, and was a constant contributor to the newspapers.

VIENNA COFFEE POT, 1830
In the Metropolitan Museum of Art

SPANISH COFFEE POT, EIGHTEENTH CENTURY
In the Metropolitan Museum

Judge Clearwater's collection of colonial silver in the Metropolitan Museum, to which he is constantly adding, is a magnificent one; and the coffee pot is worthy of it. It is thirteen and one-half inches high, weighs forty-four ounces, exclusive of the ebony handle, has a curved body and splayed base, with a godrooned band to the base and a similar edge to the cover. The spout is elaborate and curved; the cover has an urn-shaped finial; and there is a decoration of an engraved medallion surrounded by a wreath with a ribbon forming a true lover's knot.

In the Halsey collection is shown a silver coffee pot by Samuel Minott, and several beautiful specimens of the handiwork of Paul Revere, whose name is more often connected with the famous "midnight ride" than with the art of the silversmith. Of all



By Samuel Minott
Halsey Collection

By Charles Hatfield
Metropolitan Museum of Art

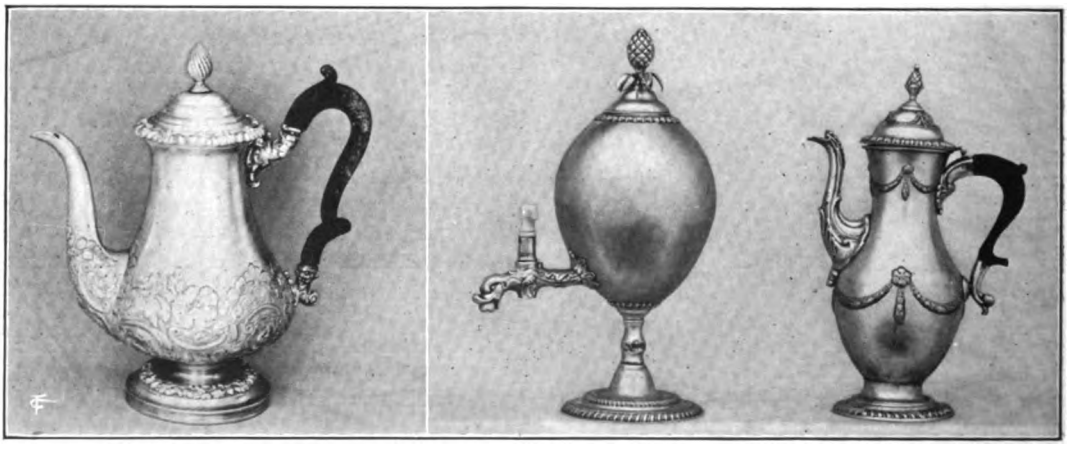
By Pygan Adams
Clearwater Collection

London Pot, 1773-74

By Jacob Hurd

By Paul Revere

FROM FRANCIS HILL BIGELOW'S "HISTORIC SILVER OF THE COLONIES"



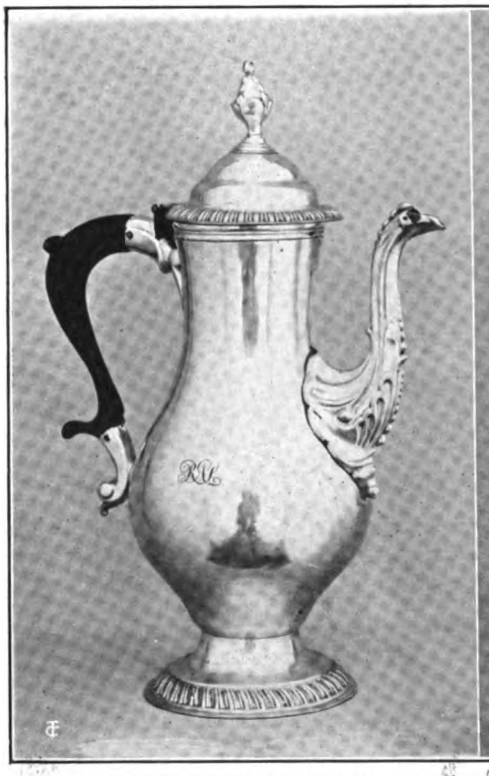
ENGLISH SHEFFIELD PLATE COFFEE POTS AND COFFEE URN, EIGHTEENTH CENTURY

SILVER COFFEE POTS IN AMERICAN COLLECTIONS

the American silversmiths, Paul Revere was the most interesting. Not only was he a silversmith of renown, but a patriot, soldier, grand master Mason, confidential agent of the state of Massachusetts Bay, engraver, picture-frame designer, and die-sinker. He was born in Boston in 1735, and died in 1818. He was the most famous of all the Boston silversmiths, although he is more widely known as a patriot. He was the third of a family of twelve children, and early entered his father's shop. When only nineteen, his father died; but he was able to carry on the business. The engraving on his silver bears witness to his ability. He engraved also on copper, and made many political cartoons. He joined the expedition against the French at Crown Point, and in the war of the Revolution was a lieutenant-colonel of artillery. After the close of the war, he resumed his business of a goldsmith and silversmith in 1783. Decidedly a man of action, he well played many parts; and in all his manifold under-

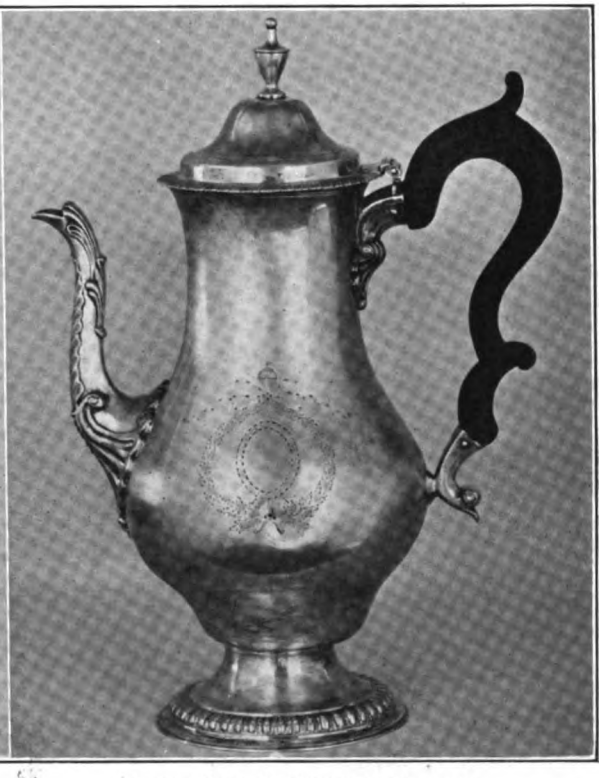
COFFEE POT BY WM. SHAW AND WM. PRIEST

Made for Peter Faneuil (about 1751-52), who gave to Boston Faneuil Hall, called the cradle of American liberty



POT OF SHEFFIELD PLATE, 18TH CENTURY

In the Metropolitan Museum



SILVER POT BY EPHRAIM BRASHER

In the Clearwater Collection, Metropolitan Museum

FRENCH SILVER COFFEE POT
Grand Prize, Union Centrale, 1886.

takings achieved brilliant success. There clings, therefore, to the articles of silver made by him an element of romantic and patriotic association which endears them to those who possess them.

Revere had a real talent that enabled him to impart an unwonted elegance to his work, and he was famous as an engraver of the beautiful crests, armorial designs, and floral wreaths that adorn much of his work. His tea pots and coffee pots are unusually beautiful.

Revere coffee pots are to be seen in the Boston Museum of Fine Arts as well as in the Metropolitan Museum in New York. The Boston Museum of Fine Arts has also a coffee pot made by William Shaw and William Priest in 1751-52 for Peter Faneuil, the wealthiest Bostonian of his time, who gave to Boston Faneuil Hall, New England's cradle of American liberty.

Among other American silversmiths who produced striking designs in coffee pots, mention should be made of G. Aiken (1815); Garrett Eoff (New York, 1785-1850); Charles Faris (who worked in Boston about 1790); Jacob Hurd (1702-1758, known in Boston as Captain Hurd); John McMullin (mentioned in the Philadelphia *Directory* for 1796); James Musgrave (mentioned in Philadelphia directories of 1797, 1808, and 1811); Myer Myers (admitted as freeman, New York, 1746; active until 1790; president of the New York Silversmiths Society, 1786); and Anthony Rasch (who is known to have worked in Philadelphia, 1815).

In the museums of the many historical societies throughout the United States are to be seen interesting specimens of coffee pots in pewter, Britannia metal, and tin ware, as well as in pottery, porcelain, and silver. Some of these are illustrated.

As in other branches of art during the seventeenth and eighteenth centuries, the United States were indebted to England, Holland, and France for much of the early pottery and porcelain. Elers, Astbury, Whieldon, Wedgwood, their imitators, and the later Staffordshire potters, flooded the American market with their wares. Porcelain was not made in this country previous to the nineteenth century. Decorative pottery was made here, however, from an early period. Britannia ware began to take the place of pewter in 1825; and the

THE GREEN DRAGON TAVERN COFFEE URN

By an unknown silversmith By Paul Revere By Paul Revere

COFFEE POTS BY AMERICAN SILVERSMITHS

introduction of japanned tin ware and pottery gradually caused the manufacture of pewter to be abandoned.

An interesting relic is in the collection of the Bostonian Society. It is a coffee urn of Sheffield ware, formerly in the Green Dragon tavern, which stood on Union Street from 1697 to 1832, and was a famous meeting place of the patriots of the Revolution. It is globular in form, and rests on a base; and inside is still to be seen the cylindrical piece of iron which, when heated, kept the delectable liquid contents of the urn hot until imbibed by the frequenters of the tavern. The iron bar was set in a zinc or tin jacket to keep such fire-place ashes as still clung to it from coming in contact with the coffee, which was probably brewed in a stew kettle before being poured into the urn for serving. The Green Dragon tavern site, now occupied by a business structure, is owned

TWENTIETH-CENTURY AMERICAN COFFEE SERVICE

The Portsmouth Pattern, by the Gorham Co.

by the St. Andrew's Lodge of Freemasons of Boston; and at a recent gathering of the lodge on St. Andrew's Day, the urn was exhibited to the assembled brethren.

When the contents of the tavern were sold, the urn was bought by Mrs. Elizabeth Harrington, who then kept a famous boarding-house on Pearl Street, in a building owned by the Quincy family. The house was razed in 1847, and was replaced by the Quincy Block; and Mrs. Harrington removed to High Street, and from there to Chauncey Place. Some of the prominent men of Boston boarded with her for many years. At her death, the urn was given to her daughter, Mrs. John R. Bradford. It was presented to the society by Miss Phebe C. Bradford, of Boston, granddaughter of Mrs. Elizabeth Harrington.

A somewhat similar urn, made of pewter, is in the Museum of the Maine Historical Society of Portland, Me.; another in the Museum of the Essex Institute at Salem, Mass.

Among the many treasured relics of Abraham Lincoln is an old Britannia coffee pot from which he was regularly served while a boarder with the Rutledge family at the Rutledge inn in New Salem (now Menard), Ill. It was a valued utensil, and Lincoln is said to have been very fond of it. It is illustrated on page 690.

The pot is now the property of the Old Salem Lincoln League, of Petersburg, Ill., and was donated to it, with other relics, by Mrs. Saunders, of Sisquoc, Cal., the only surviving child of James and Mary Ann Rutledge. Mrs. Rutledge carefully preserved this and other relics of New Salem days; and shortly before her death in 1878, she gave them into the keeping of her daughter, Mrs. Saunders, advising her to preserve them until such time as a permanent home for them would be provided by a grateful people back at New Salem, where they were associated with the immortal Lincoln and his tragic romance with her daughter Ann.

TURKISH COFFEE SET, PETER COLLECTION, UNITED STATES NATIONAL MUSEUM, WASHINGTON

CHAPTER XXXIV

THE EVOLUTION OF COFFEE APPARATUS

Showing the development of coffee-roasting, coffee-grinding, coffee-making, and coffee-serving devices from the earliest time to the present day — The original coffee grinder, the first coffee roaster, and the first coffee pot — The original French drip pot, the De Belloy percolator — Count Rumford's improvement — How the commercial coffee roaster was developed — The evolution of filtration devices — The old Carter "pull-out" roaster — Trade customs in New York and St. Louis in the sixties and seventies — The story of the evolution of the Burns roaster — How the gas roaster was developed in France, Great Britain, and the United States

A BOOK could be written on the subject of this chapter. We shall have to be content to touch briefly upon the important developments in the devices employed. The changes that have taken place in the preparation of the drink itself will be discussed in chapter XXXVI.

In the beginning, that is, in Ethiopia, about 800 A.D., coffee was looked upon as a food. The whole ripe berries, beans and hulls, were crushed, and molded into food balls held in shape with fat. Later, the dried berries were so treated. So the primitive stone mortar and pestle were the original coffee grinder.

The dried hulls and the green beans were first roasted, some time between 1200 and 1300, in crude burnt clay dishes or in stone vessels, over open fires. These were the original roasting utensils.

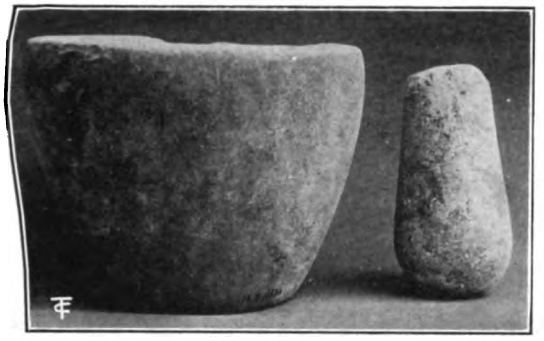
Next, the coffee beans were ground between little millstones, one turning above the other. Then came the mill used by the Greeks and Romans for grain. This mill consisted of two conical mill stones, one hollow and fitted over the other, specimens of which have been found in Pompeii. The idea is the same as that employed in the most modern metal grinder.

Between 1400 and 1500, individual earthenware and metal coffee-roasting plates appeared. These were circular, from four to six inches in diameter, about ⅛ inch thick, slightly concave and pierced with small holes, something like the modern kitchen skimmer. They were used in Turkey and Persia for roasting a few beans at a time over braziers (open pans, or basins, for holding live coals). The braziers were usually mounted on feet and richly ornamented.

About the same time we notice the first appearance of the familiar Turkish pocket cylinder coffee mill and the original Turkish *ibrik*, or coffee boiler, made of metal. Little drinking cups of Chinese porcelain completed the service.

The original coffee boiler was not unlike the English ale mug with no cover, smaller at the top than at the bottom, fitted with a grooved lip for pouring, and a long straight handle. They were made of brass, and in sizes to hold from one to six tiny cupfuls. A later improvement was of the ewer design, with bulbous body, collar top, and cover.

The Turkish coffee grinder seems to have suggested the individual cylinder roaster



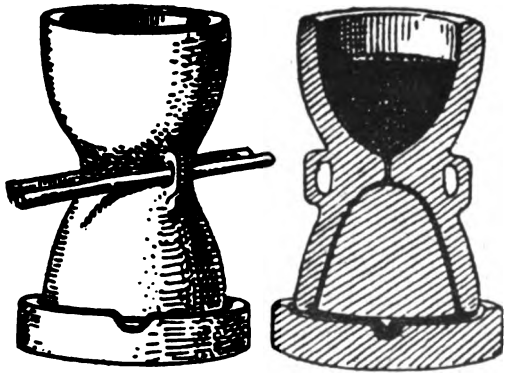
THE OLDEST COFFEE GRINDER
Ancient Egyptian mortar and pestle, probably used for pounding coffee

which later (1650) became common, and from which developed the huge modern cylinder commercial roasting machines.

The individual coffee service of early civilization first employed crude clay bowls or dishes for drinking; but as early as 1350, Persian, Egyptian, and Turkish ewers, made of pottery, were used for serving. In the seventeenth century, ewers of similar pattern, but made of metal, were the favorite coffee-serving devices in oriental countries and in western Europe.

Between 1428 and 1448, a spice grinder standing on four legs was invented; and this was later used for grinding coffee. The drawer to receive the ground coffee was added in the eighteenth century.

Between 1500 and 1600, shallow iron dippers with long handles and foot-rests, designed to stand in open fires, were used in Bagdad, and by the Arabs in Mesopotamia, for roasting coffee. These roasters had handles about thirty-four inches long, and the bowls were eight inches in diameter. They were accompanied by a metal stirrer (spatula) for turning the beans.



GRAIN MILL OF GREEKS AND ROMANS
Also used for grinding coffee

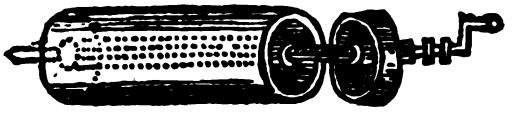
Another type of roaster was developed about 1600. It was in the shape of an iron spider on legs, and was designed, like that just described, to sit in open fires. At this period pewter serving pots were first used.

Between 1600 and 1632, mortars and pestles of wood, iron, brass, and bronze came into common use in Europe for braying the roasted beans. For several centuries, coffee connoisseurs held that pounding the beans in a mortar was superior to grinding in the most efficient mill. Peregrine White's parents brought to America on the *Mayflower*, in 1620, a wooden mortar and pestle that were used for braying coffee to make coffee "powder."

When La Roque speaks of his father bringing back to Marseilles from Constanti-

THE FIRST COFFEE ROASTER, ABOUT 1400

nople in 1644 the instruments for making coffee, he undoubtedly refers to the individual devices which at that time in the Orient included the roaster plate, the cylinder grinder, the small long-handled boiler, and *fenjeyns* (findjans), the little porcelain drinking cups.



THE FIRST CYLINDER ROASTER, ABOUT 1650

When Bernier visited Grand Cairo about the middle of the seventeenth century, in all the city's thousand-odd coffee houses he found but two persons who understood the art of roasting the bean.

About 1650, there was developed the individual cylinder coffee roaster made of metal, usually tin plate or tinned copper, suggested by the original Turkish pocket grinder. This was designed for use over open fires in braziers. There appeared about this time also a combined making-and-serving metal pot which was undoubtedly the original of the common type of pot that we know today.

There appeared in England about 1660, Elford's white iron machine (sheet iron coated with tin) which was "turned on a

HISTORICAL RELICS IN THE PETER COLLECTION, UNITED STATES NATIONAL MUSEUM

1 — Bagdad coffee-roasting pan and stirrer. 2 — Iron mortar and pestle used for pounding coffee. 3 — Coffee mill used by General and Mrs. Washington. 4 — Coffee-roasting pan used at Mt. Vernon. 5 — Bagdad coffee pot with crow-bill spout

spit by a jack.[1] '' This was simply a larger size of the individual cylinder roaster, and was designed for family or commercial use. Modifications were developed by the French and Dutch. In the seventeenth century the Italians produced some beautiful designs in wrought-iron coffee roasters.

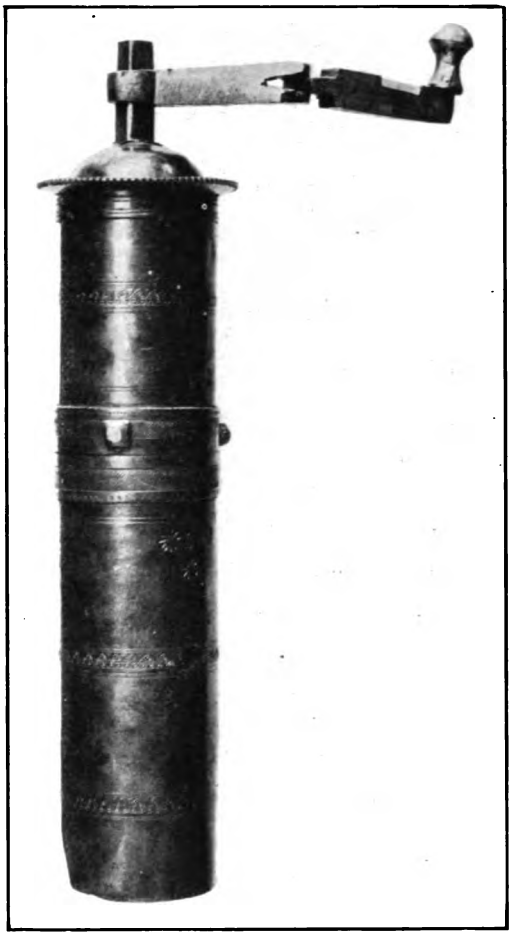
Before the advent of the Elford machine, and indeed, for two centuries thereafter, it was the common practise in the home to roast coffee in uncovered earthenware tart dishes, old pudding pans, and fry pans. Before the time of the modern kitchen stove, it was usually done over charcoal fires without flame.

The improved Turkish combination coffee grinder with folding handle and cup receptacle for the beans, used for grinding, boiling, and drinking, was first made in Damascus in 1665. About this period, the Turkish coffee set, including the long-handled boiler and the porcelain drinking cups in brass holders, also came into vogue.

In 1665, Nicholas Book, "living at the Sign of the Frying Pan in St. Tulies street," London, advertised that he was "the only known man for making of mills for grinding of coffee powder, which mills are sold by him from forty to forty-five shillings the mill."

By combining the long-handle idea contained in the Bagdad roaster with that of the original cylinder roaster, the Dutch perfected a small, closed, sheet-iron cylinder-roaster with a long handle that permitted its being held and turned in open fire

[1] A mechanical contrivance that took the place of a boy.



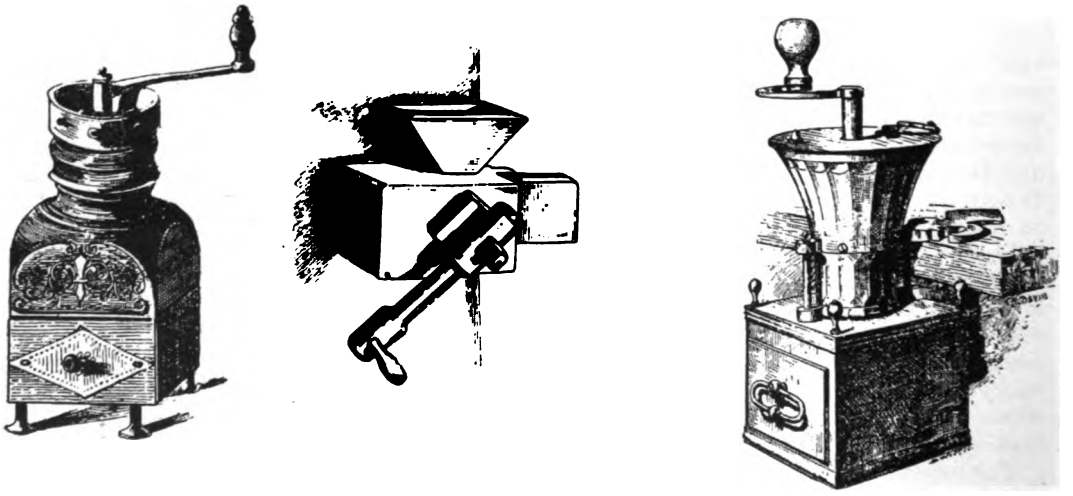
TURKISH COFFEE MILL
A fine specimen in the Peter collection, United States National Museum

places. From 1670, and well into the middle of the nineteenth century, this type of family roaster enjoyed great favor in Holland, France, England, and the United States, more especially in the country districts. The museums of Europe and the United States contain many specimens. The iron cylinder measured about five inches in diameter, and was from six to eight inches long, being attached to a three or four foot iron rod provided with a wooden handle. The green coffee was put into the cylinder through a sliding door. Balancing the roaster over the blaze by resting the end of the iron rod projecting from the far end of the roasting cylinder in a hook of the usual fire-place crane, the house-keeper was wont slowly to revolve the cylinder until the beans had turned the proper color.

Portable coffee-making outfits to fit the pocket were much in vogue in France in 1691. These included a roaster, a grinder, a lamp, the oil, cups, saucers, spoons, coffee, and sugar. The roaster was first made of tin plate or tinned copper; but for the aristocracy silver and gold were used. In 1754, a white-silver coffee roaster eight inches long and four inches in diameter was mentioned among the deliveries made to the army of the king at Versailles.

Humphrey Broadbent, "the London coffee man" wrote in 1722:

I hold it best to roast coffee berries in an iron vessel full of little holes, made to turn on a spit over a charcoal fire, keeping them continually turning, and sometimes shaking them that they



EARLY FRENCH WALL AND TABLE GRINDERS
Left, seventeenth-century coffee grinder in the Musée de la Porte de Hal — Center, wall mill, eighteenth century — Right, iron mill, eighteenth century

BRONZE AND BRASS MORTARS OF THE SEVENTEENTH CENTURY USED FOR MAKING COFFEE POWDER
Left, bronze (Germany) — Center, brass (England) — Right, bronze (Holland, 1632)

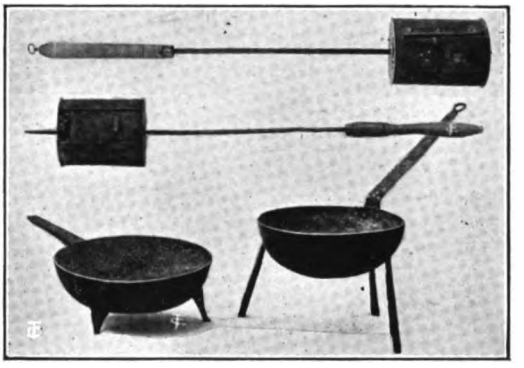
do not burn, and when they are taken out of the vessel, spread 'em on some tin or iron plate 'till the vehemency of the heat is vanished; I would recommend to every family to roast their own coffee, for then they will be almost secure from having any damaged berries, or any art to increase the weight, which is very injurious to the drinkers of coffee. Most persons of distinction in Holland roast their own berries.

Between 1700 and 1800, there was developed a type of small portable household stove to burn coke or charcoal, made of iron and fitted with horizontal revolving cylinders for coffee roasting. These were provided with iron handles for turning. A modification of this type of roaster under a three-sided hood, and standing on three legs, was designed to sit on the hearth of open fire-places, close to the fire or in the smoldering ashes. Because of its greater capacity, it was probably used in the inns and coffee houses for roasting large batches. Still another type, which made its appearance late in the eighteenth century, was the sheet-iron roaster suspended at the top of a tall, iron, box-like compartment, or stove, in which the fire was built. This, too, was designed to roast coffee in comparatively large quantities. In some examples it was provided with legs.

Great silver coffee pots ("with all the utensils belonging to them of the same metal") were first used by Pascal at St.-Germain's fair in Paris in 1672. It remained for the English and American silversmiths to produce the most beautiful forms of silver coffee pots; and there are some notable collections of these in England and the United States.

The oriental serving pot was nearly always of metal, tall, and, in old models, of graceful curve, with a slightly twisted ornamental beak in the form of an S, attached below the middle of the vessel. A handle ornamented in the same way formed a decorative balance.

In 1692, the lantern straight-line coffee serving pot with true cone lid, thumb-piece, and handle fixed at right angle to the spout, was introduced into England, succeeding the curved oriental serving pot. In 1700, coffee pots made of cheaper metals, like tin and Britannia ware, began to appear on the home tables of the people. In 1701, silver coffee pots appeared in England having perfect domes and bodies less tapering. Between 1700 and 1800, silver, gold, and delicate porcelain serving pots were the vogue among European royalty.



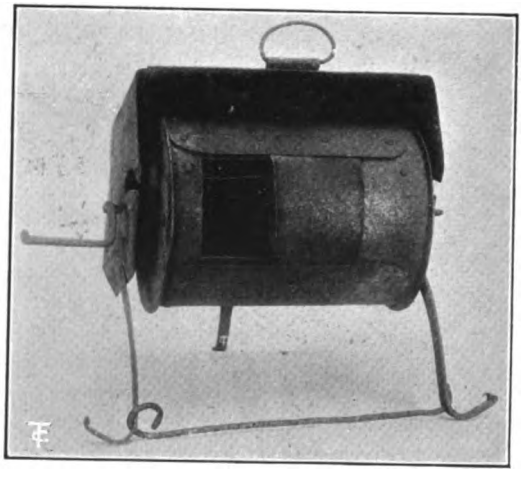
EARLY AMERICAN COFFEE ROASTERS
Both the cast-iron spiders and the long-handled roasters were used in open fireplaces previous to 1770

In 1704, Bull's machine for roasting coffee was patented in England. This probably marks the first use of coal for commercial roasting.

In 1710, the popular coffee roaster in French homes was a dish of varnished earthenware. This same year a novelty was introduced in France in the shape of a fustian (linen) bag for infusing ground coffee.

By 1714, the thumb-piece on English serving pots had disappeared, and the handle was no longer set at a right angle to the spout. English coffee-pot bodies showed a further modification in 1725, the taper becoming less and less.

Coffee grinders were so common in France in 1720 that they were to be had for a dollar and twenty cents each. Their development by the French had been rapid from the original spice grinder. At first, they were known as coffee mills; but in the eighteenth century, roasters came to be known by that name. They were made of iron, retaining the same principle of the horizontal mill-stones — one of which is fixed while the other moves — that the ancients employed for grinding wheat. They were squat, box-shaped affairs, having in the center a shank of iron that revolved upon a fixed, corrugated iron plate. There was also the style that fastened to the wall. At first, the drawer to receive ground coffee was missing, but this was supplied in later types. Before its invention, the ground coffee was received in a sack of greased leather, or in one treated on the outside with beeswax — probably the original of the duplex paper bag for conserving the flavor.



ROASTER WITH THREE-SIDED HOOD

It succeeded the cast-iron spider, and was suspended from a crane, or stood in the embers

ROASTING, MAKING, AND SERVING DEVICES

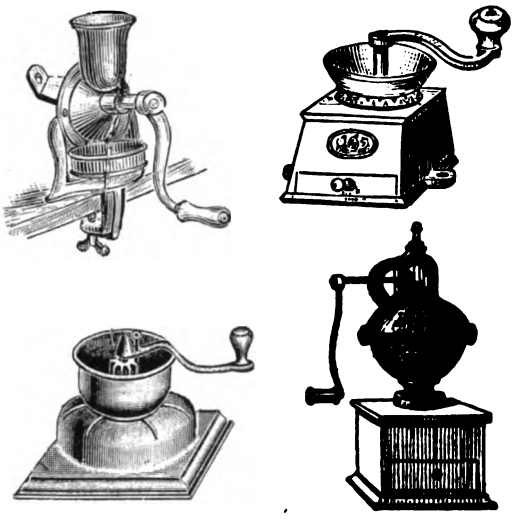
Early seventeenth century, as pictured by Dufour

The French brought their innate artistic talents to bear upon coffee grinders, just as they did upon roasters and serving pots. In many instances they made the outer parts of silver and of gold.

By 1750, the straight-line serving pot in England had begun to yield to the reactionary movement in art favoring bulbous bodies and serpentine spouts.

About 1760, French inventors began to devote themselves to improvements in coffee-making devices. Donmartin, a Paris tinsmith, in 1763, invented an urn pot that employed a flannel sack for infusing. Another infusion device, produced the same year by L'Aine, also a tinsmith of Paris, was known as a *diligence*.

A complete revolution in the style of English serving pots took place in 1770,



ENGLISH AND FRENCH COFFEE GRINDERS
Nineteenth century

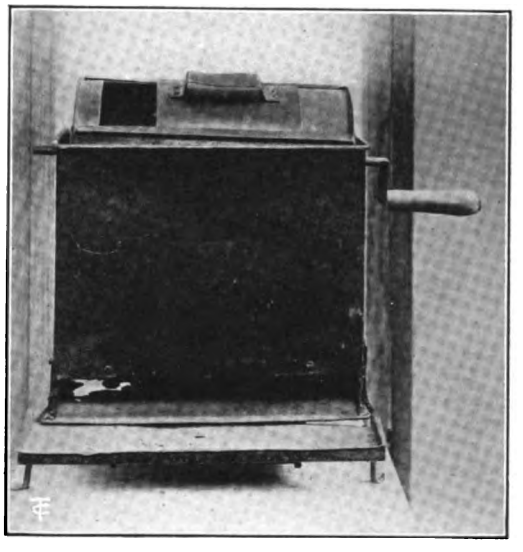
with a return to the flowing lines of the Turkish ewer; and between 1800 and 1900, there was a gradual return to the style of serving pot having the handle at a right angle to the spout.

In 1779, Richard Dearman was granted an English patent on a new method of making mills for grinding coffee. In 1798, the first American patent on an improved coffee grinding mill was granted to Thomas Bruff, Sr. It was a wall mill, fitted with iron plates, in which the coffee was ground between two circular nuts, three inches broad and having coarse teeth around their centers and fine shallow teeth at the edges.

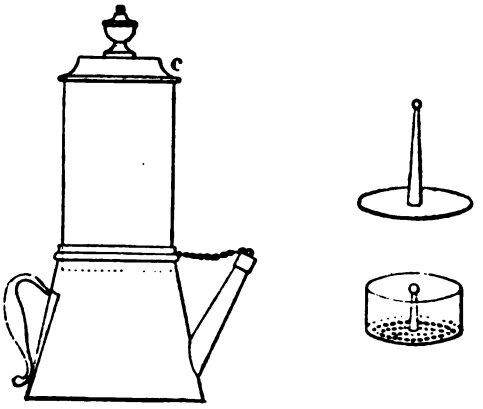
De Belloy's (or Du Belloy's) coffee pot appeared in Paris about 1800. It was first made of tin; but later, of porcelain and silver — the original French drip pot. This device was never patented; but it appears to have furnished the inspiration for many inventors in France, England, and the United States. The first French patent on a coffee maker was granted to Denobe, Henrion, and Rouch in 1802. It was for a "pharmacological-chemical coffee-making device by infusion." Charles Wyatt obtained a patent the same year in London on an apparatus for distilling coffee. The De Belloy pot is illustrated on page 622.

In 1806, Hadrot was granted a French patent on a device "for filtering coffee without boiling and bathed in air." This use of the word filtering was misleading, as it was many times after in French, English, and American patent nomenclature, where it often meant percolation or something quite different from filtration. True percolation means to drip through fine interstices of china or metal. Filtration means to drip through a porous substance, usually cloth or paper. De Belloy's pot was a percolator. So was Hadrot's. The improvement on which Hadrot got his patent was to "replace the white iron filter (sic) used in ordinary filtering pots by a filter composed of hard tin and bismuth" and to use "a rammer of the same metal, pierced with holes." The rammer was designed to press down and to smooth out the powdered coffee in an even and uniform fashion. "It also," says Hadrot in his specification, "stops the derangement which boiling water poured from a height can produce. It is held by its stem a half inch from the surface of the powder so that it receives only the action of the water which it divides and facilitates thus the extraction which it must produce in each of the particles."

A coffee percolator was invented in Paris about 1806 by Benjamin Thompson, F.R.S., an American-British scientist, philanthropist, and administrator. He was known as Count Rumford, a title bestowed on him by the Pope. Rumford's invention was first given to the public in London in 1812. He has gained great credit for his device, because of an elaborate essay that he wrote on it in Paris under the title of *The excel-*



EIGHTEENTH-CENTURY ROASTER
Essex Institute, Salem, Mass.



THE ORIGINAL FRENCH DRIP POT
Cafetière à la De Belloy

lent qualities of coffee and the art of making it in the highest perfection, and that he caused to be published in London in 1812. It was a simple percolator pot provided with a hot-water jacket, and was a real improvement on the French drip or percolator coffee pot invented by De Belloy, but not at all unlike Hadrot's patented device. Count Rumford, however, was a picturesque character, and a good advertiser. He is generally credited with the invention of the coffee percolator; but examination of his device shows that, strictly speaking, the De Belloy pot was just as much a percolator, and apparently antedated it by about six years.

De Belloy employed the principle of having the boiling water drip through the ground coffee when held in suspension by a perforated metal or porcelain grid. This is true percolation. Hadrot did the same thing with the improvements noted above. Count Rumford in his essay admits that this method of making coffee was not new, but claims his improvement was. This was to provide a rammer for compressing the ground coffee in the upper or percolating device into a definite thickness, this being accomplished by providing the perforated circular tin disk water-spreader that rested on the ground coffee with four projections, or feet, that kept the spreader within half an inch of the grid holding the powder in suspension and free from "agitation."

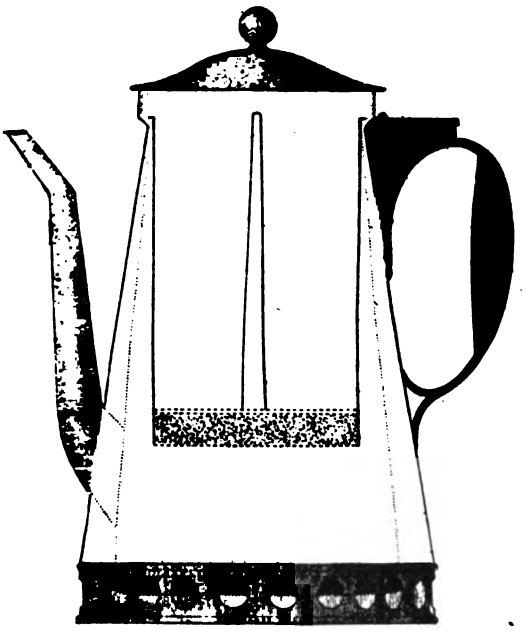
His argument was that two-thirds of an inch of ground coffee should be leveled and compressed into a half-inch thickness before the boiling water was introduced. Practically the same result was achieved in the De Belloy and Hadrot pots, also provided with water-spreaders and pluggers, but the same mathematical exactitude in the matter of the depth of the ground coffee before the percolation started was not assured. De Belloy's spreader did not have the projections on the under side upon which Count Rumford laid such stress. Then there was the hot-water jacket, which was an improvement on Hadrot's hot air bath. Inventors that followed Rumford have made light of the importance that he attached to scientific accuracy in coffee-making; but it is interesting to note how many of the features of the De Belloy, Hadrot, and Rumford pots have been retained in the modern complex coffee machines, and in most of the filtration devices.

BELGIAN, RUSSIAN, AND FRENCH PEWTER SERVING POTS
These are in the Metropolitan Museum and are of nineteenth century design

French inventors continued to apply themselves to coffee-roasting and coffee-making problems, and many new ideas were evolved. Some of these were improved upon by the Dutch, the Germans, and the Italians; but the best work in the line of improvements that have survived the test of time was done in England and the United States.

In 1815, Sene was granted a French patent on "a device to make coffee without boiling." In 1819, Laurens produced the original of the percolation device in which the boiling water is raised by a tube and sprayed over the ground coffee. The same year Morize, a Paris tinsmith and lamp-maker, followed with a reversible, double drip pot which was the pioneer of all the reversible filtration pots of Europe and America. Gaudet, another tinsmith, in 1820, patented an improvement on the percolator idea, that employed a cloth filter. By 1825, the pumping percolator, working by steam pressure and by partial vacuum, was much used in France, Holland, Germany, and Austria.

Meanwhile, it was common practise to roast coffee in England in "an iron pan or in hollow cylinders made of sheet iron"; while in Italy, the practise was to roast it in glass flasks, which were fitted with loose corks. The flasks were "held over clear fires of burning coals and continually agitated." Anthony Schick was granted an English patent in 1812, on a method, or process, for roasting coffee; but as he never filed his specifications, we shall probably never know what the process was. The custom of the day in England was to pound the roasted beans in a mortar, or to grind them in a French mill.

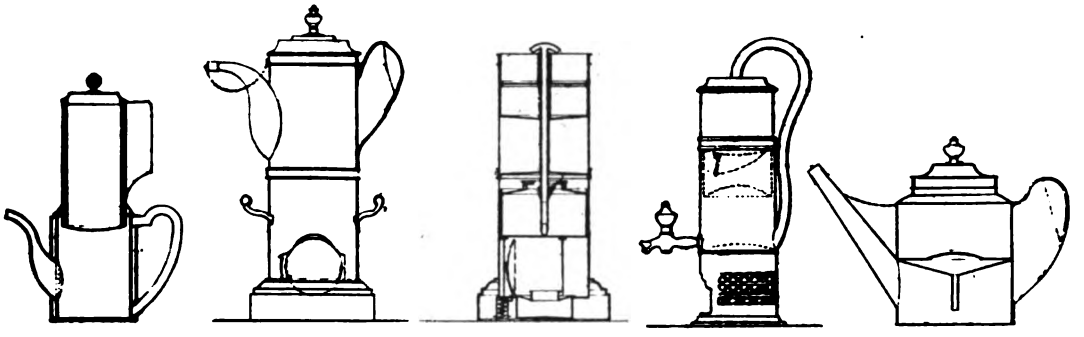


COUNT RUMFORD'S PERCOLATOR

In 1822, Louis Bernard Rabaut was granted an English patent in which the French drip process was reversed by using steam pressure to force the boiling water upward through the coffee mass. Casseneuve, a Paris tinsmith, seems to have patented practically the same idea in France in 1824. Casseneuve employed a paper filter in his machine.

In America, a United States patent was granted in 1813 to Alexander Duncan Moore of New Haven on a mill "for grinding and pounding coffee." This was followed by a patent granted to Increase Wilson, of New London, in 1818, on a steel mill for grinding coffee.

PEWTER POTS OF THE SEVENTEENTH AND EIGHTEENTH CENTURIES
Left to right, they are German, Flemish, English, and Dutch specimens in the Metropolitan Museum



PATENT DRAWINGS OF EARLY FRENCH COFFEE MAKERS

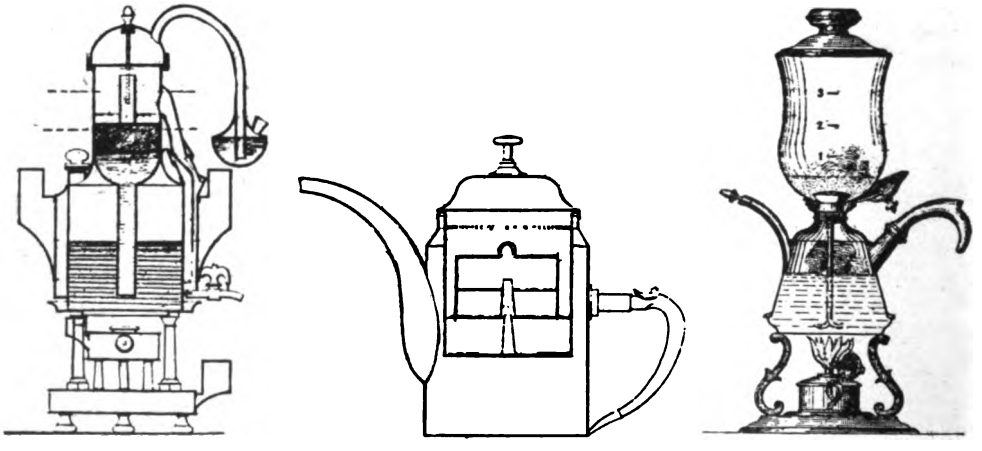
Left, drip pot of 1806 — Next two, Durant's inner-tube pot, 1827 — Next (fourth), Gandais' first practicable percolator, 1827 — Right, Grandin & Crepeaux' percolator, 1832

In 1815, Archibald Kenrich was granted a patent in England on "mills for grinding coffee."

The coffee biggin, said to have been invented by a Mr. Biggin, came into common use in England for making coffee about 1817. It was usually an earthenware pot. At first it had in the upper part a metal strainer like the French drip pots. Suspended from the rim in later models there was a flannel or muslin bag to hold the ground coffee, through which the boiling water was poured, the bag serving as a filter. The idea was an adaptation of the French fustian infusion bag of 1711, and of other early French drip and filtration devices, and it attained great popularity. Any coffee pot with such a bag fitted into its mouth came to be spoken of as a coffee biggin. Later, there was evolved the metal pot with a wire strainer substituted for the cloth bag. The coffee biggin still retains its popularity in England.

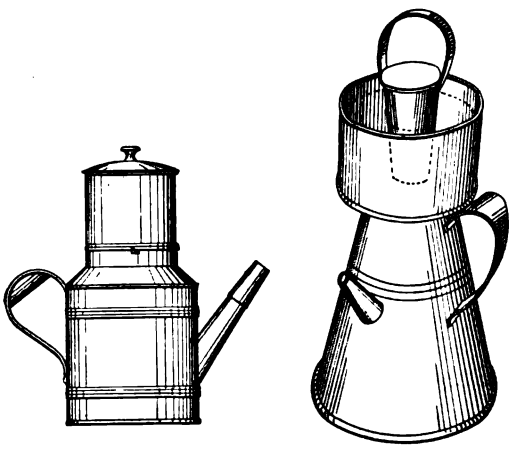
While French inventors were busy with coffee makers, English and American inventors were studying means to improve the roasting of the beans. Peregrine Williamson, of Baltimore, was granted the first patent in the United States for an improvement on a coffee roaster in 1820. In 1824, Richard Evans was granted a patent in England for a commercial method of roasting coffee, comprising a cylindrical sheet-iron roaster fitted with improved flanges for mixing; a hollow tube and trier for sampling coffee while roasting; and a means for turning the roaster completely over to empty it.

The next year, 1825, the first coffee-pot patent in the United States was granted to Lewis Martelley of New York. It marked the first American attempt to perfect an



EARLY FRENCH FILTRATION DEVICES

Left, Casseneuve's filter-paper machine, 1824 — Center, Gaudet's cloth-filter pot, 1820 — Right, Raparlier's percolator



EARLY AMERICAN COFFEE-MAKER PATENTS
Left, Waite & Sener's Old Dominion pot — Right, Bencini's steam condenser

arrangement to condense the steam and the essential oils and to return them to the infusion. In 1838, Antoni Bencini, of Milton, N. C., was granted a similar patent in the United States. Rowland, in 1844, and Waite and Sener, in their Old Dominion pot of 1856, tried for the same result, namely, the condensation of the steam in upper chambers.

The French meantime focused on coffee makers; and in 1827, Jacques Augustin Gandais, a manufacturer of plated jewelry in Paris, produced a really practicable pumping percolator. This machine had the ascending steam tube on the exterior. The same year, 1827, Nicholas Felix Durant, a manufacturer in Chalons-sur-Marne, was granted a French patent on a percolator employing for the first time an inner tube for spraying the boiling water over the ground coffee.

In 1828, Charles Parker, of Meriden, Conn., began work on the original Parker coffee mill, which later was to bring him fame and fortune.

The next year, 1829, the first French patent on a coffee mill was issued to Colaux & Cie. of Molsheim.

That same year, 1829, the Établissements Lauzaune, Paris, began to make hand-turned iron-cylinder coffee-roasting machines.

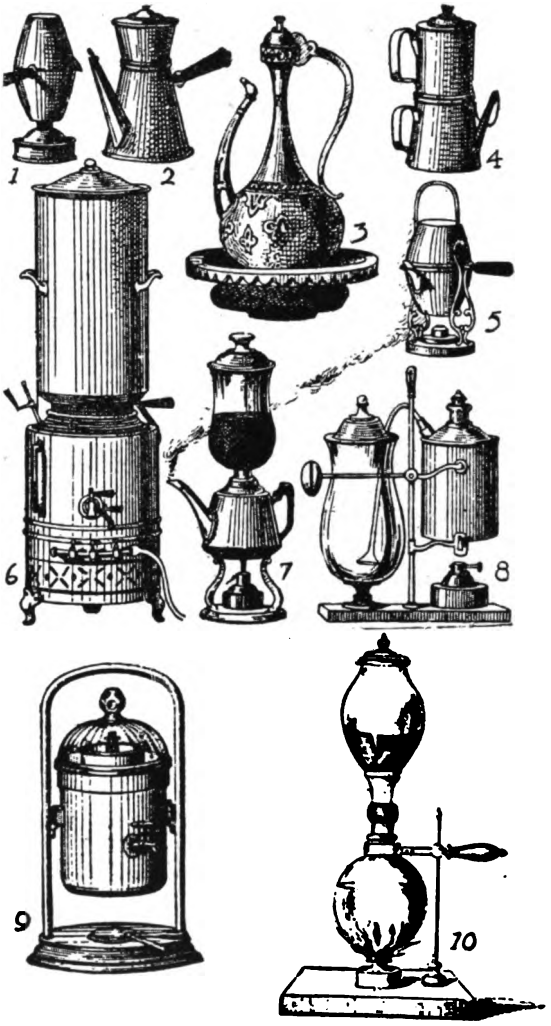
In 1831, David Selden was granted a patent in England for a coffee-grinding mill having cones of cast iron.

The first Parker coffee-grinder patent for a household coffee and spice mill was issued in the United States in 1832 to Edmund Parker and Herman M. White of Meriden, Conn. The Charles Parker Company's business was founded the same year. In 1832 and 1833, United States patents were issued to Ammi Clark, of Berlin, Conn., also on improved coffee and spice mills for home use.

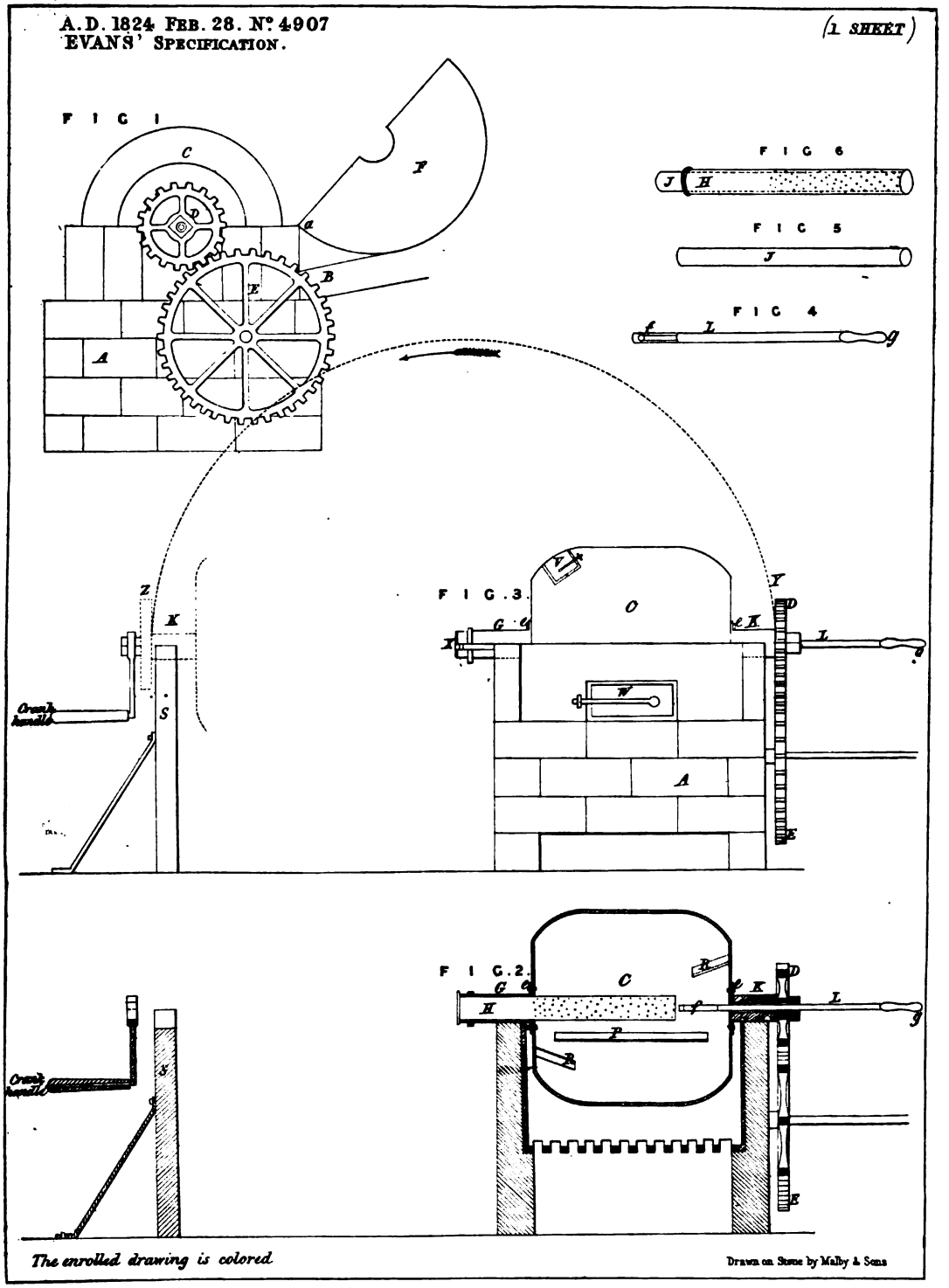
Amos Ransom, Hartford, Conn., was granted a United States patent on a coffee roaster in 1833.

The English began exporting coffee-roasting and coffee-grinding machinery to the United States in 1833 - 34.

It was not until 1836 that the first French patent was issued on a combined coffee-

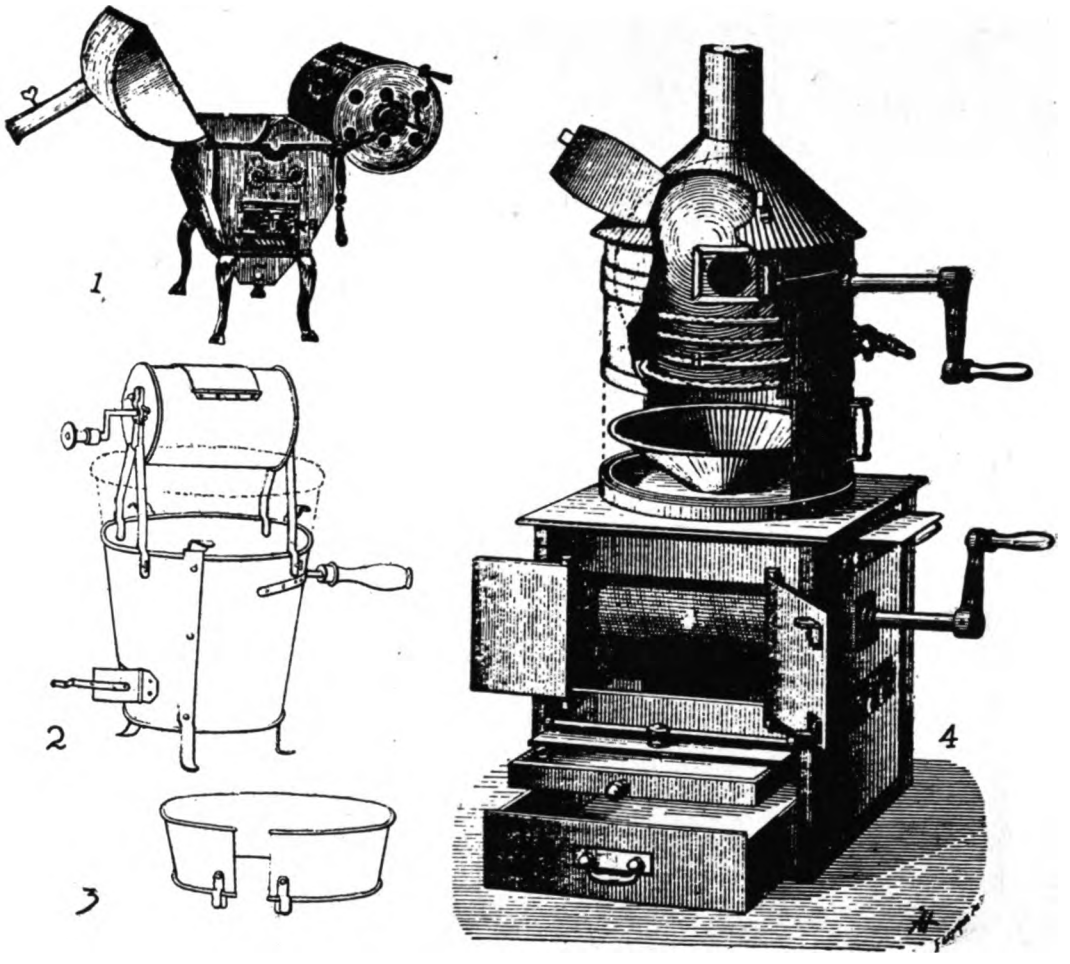


FRENCH COFFEE MAKERS, NINETEENTH CENTURY
1, 2 — Improved Franch drip pots. 3 — Persian design. 4 — De Belloy pot. 5 — Russian reversible pot. 6 — New filter machine. 7 — Glass filter pot. 8 — Syphon machine. 9 — Vienna Incomparable. 10 — Double glass "balloon" device



FIRST ENGLISH COMMERCIAL COFFEE-ROASTER PATENT, 1824

Fig. 1 — End elevation. Fig. 2 — Front sectional view. Fig. 3 — Front elevation, showing how the roasting cylinder was turned completely over to empty. Fig. 4 — The examiner, or trier. Fig. 5 — Tube (J) to be inserted in H of Fig. 6 to prevent escape of aroma



EARLY FRENCH COFFEE-ROASTING MACHINES
1 — Delephine's coke machine. 2 — Bernard's machine, 1841. 3 — Circlet for same. 4 — Postulart's gas machine

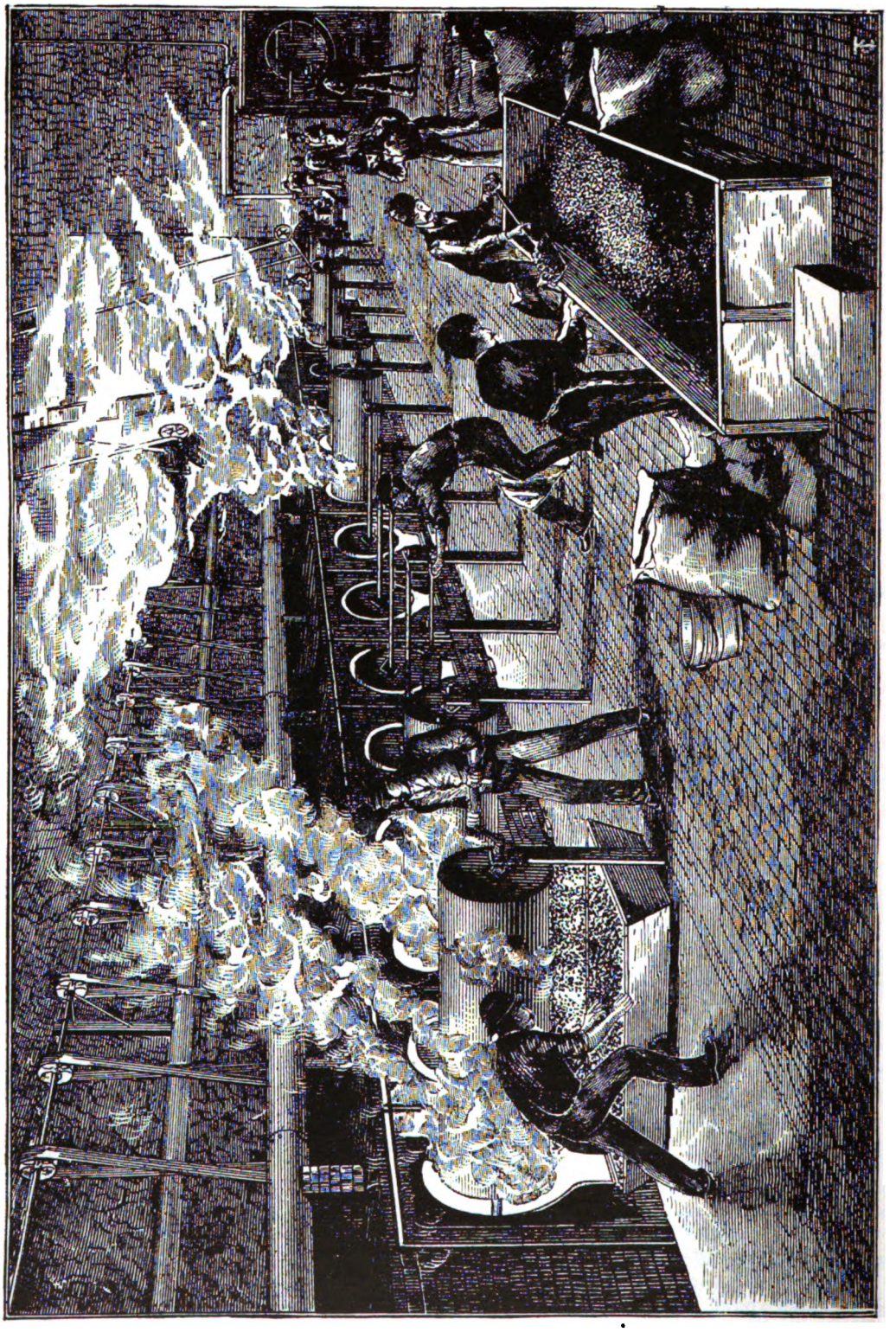
roaster-and-grinder to François Réné Lacoux of Paris. The roaster was made of porcelain, because the inventor believed that metal imparted a bad taste to the beans while roasting.

In 1839, James Vardy and Moritz Platow were granted an English patent on a kind of urn percolator employing the vacuum process of coffee making, the upper vessel being made of glass. The first French patent on a glass coffee-making device, using the same principle, was granted to Madame Vassieux, of Lyons, in 1842. These were the forerunners of the double glass "balloons" for making coffee which later on, in the early part of the twentieth century, attained much vogue in the United States. They were very popular in Europe until the latter part of the nineteenth century.

In 1839, John Rittenhouse, of Philadelphia, was granted a United States patent on a cast-iron mill designed to handle the problem of nails and stones in grinding coffee. His improvement was intended to prevent injury to the grinding teeth by stopping the machine.

In 1840, Abel Stillman, Poland, N. Y., was granted a United States patent on a family coffee roaster having a mica window to enable the operator to observe the coffee while roasting. (See 10, page 630.)

In 1841, William Ward Andrews was granted an English patent on an improved coffee pot employing a pump to force the boiling water upward through the coffee, which was contained in a perforated cylinder screwed to the bottom of the pot. This was Rabaut's idea of nineteen years before.



BATTERY OF CARTER PULL-OUT MACHINES IN AN EARLY AMERICAN PLANT

We find it again repeated in the United States in a machine which appeared on the New York market in 1906.

In 1841, Claude Marie Victor Bernard, of Paris, was granted a French patent on a coffee roaster, which was an improvement designed to bring the roasting cylinder and the fire in closer contact. This was accomplished, to quote the quaint language of the inventor, by applying movable legs and "by superimposing a sheet iron circlet around the edge of the furnace to get double the quantity of heat and it presents so much advantage that it has seemed to me worthy of being patented." (See 4, page 627.)

But the French were only toying with the roaster, because roasting in France was not yet a separate branch of business, as it had become in England and the United States, where keen minds were already at work on the purely commercial coffee-roasting machine. The application of intensive thought in this direction was destined to bear fruit in America in 1846, and in England in 1847.

French inventive genius continued to occupy itself with coffee making, and in the invention of Edward Loysel de Santais, of Paris, in 1843, produced the first of the ideas that were later incorporated in the hydrostatic percolator for making "two thousand cups of coffee an hour"[2] at the exposition of 1855, and that has since been improved upon by the Italians in their rapid-filter machines. It should be noted that Loysel's 2,000 cups were probably demi-tasses. The modern Italian rapid-filter machine produces about 1,000 large coffee cups per hour.

James W. Carter, of Boston, was granted a United States patent in 1846 on his "pull-out" roaster; and this was the machine most generally employed for trade roasting in America for the next twenty years. Carter did not claim to have invented the combination of cylindrical roaster and furnace; but he did claim priority for the combination, with the furnace and roasting vessel, of the air space, or chamber, surrounding it, "the same being for the purpose of preventing the too rapid escape of heat from the furnace when the air chamber's induction and eduction air openings or passages are closed."

The Carter "pull-out," was so called because the roasting cylinder of sheet iron was pulled out from the furnace on a shaft supported by standards, to be emptied or to be refilled from sliding doors in its "sides." It was in use for many years in such old-time plants as that of Dwinell-Wright Company, 25 Haverhill Street, Boston; by James H. Forbes and William Schotten in St. Louis; and by D. Y. Harrison in Cincinnati.

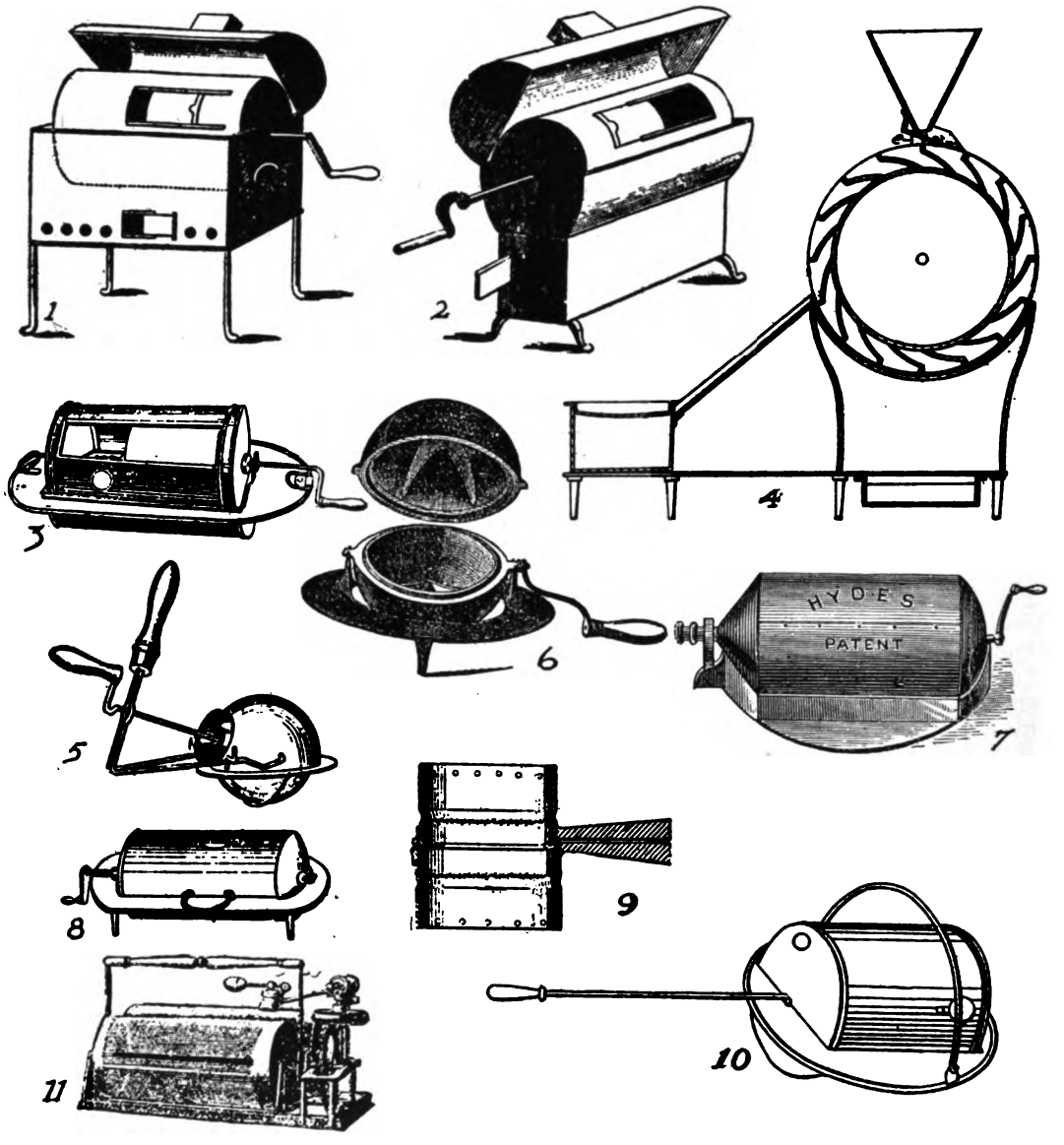
The picture of a roasting room with Carter machines in operation, reproduced here, recalled to George S. Wright, the present head of the Dwinell-Wright Company's business, the scene as he saw it so many times when, as a boy of ten or twelve, he occasionally spent a day in his father's factory. "The only difference I notice," he wrote the author, "is that, according to my recollection, there was no cooler box to receive the roasted coffee, which was dumped on the floor where it was spread out three or four inches deep with iron rakes and sprinkled with a watering pot. The contact of water and hot coffee caused so much steam that the roasting room was in a dense fog for several minutes after each batch of coffee was drawn from the fire."

A. E. Forbes also thus recalled the Carter machine in his father's factory in St. Louis in 1853, when he used to help after school; and sometimes ran the roasters, after 1857:

> It was barrel shaped, having a slide the full length of one side to fill and empty. A heavy shaft ran through the centre, resting on the wall of the furnace at the rear end and on an upright about eight feet from the front wall. The fire was about sixteen to eighteen inches below the cylinder and of soft coal. The cylinder was not perforated, the theory being to keep the vapors from escaping.[3] This of course was erroneous. The color of the smoke bursting from the edge of the slide was our medium of telling when the roasting process was nearing completion, and often the cylinder was pulled out and opened for inspection several times before that point was reached. When just right, the belt was shifted to a loose pulley, stopping the cylinder, which was pulled off the fire. A handle was attached to the shaft, the slide drawn, and the coffee was dumped into a wooden tray which had to be shoved under the cylinder. The coffee was stirred around in the tray until cool enough to sack.
>
> The roaster man had to be a husky in those days to pick up a sack of Rio weighing about one hundred, sixty to one hundred, seventy-five pounds (not a hundred, thirty-two pounds, as

[2] Jardin, Edelestan. *Le Caféier et Le Café,* Paris, 1895 (p. 290)

[3] In his patent specification, Mr. Carter said on this point: "Small holes should be made through the roaster in sufficient number to allow of the escape of the vapors and volatile matters which escape from the coffee while undergoing the process of being roasted."



EARLY ENGLISH AND AMERICAN COFFEE ROASTERS

1, 2 — English charcoal machines. 3, 5, 8 — American coal-stove roasters. 4 — Remington's wheel-of-buckets (American) roaster, 1841. 6 — Wood's roaster. 7 — Hyde's stove roaster. 9 — Reversible stove roaster. 10 — Abel Stillman's stove roaster

now) and to empty it in the cylinder. We had no overhead hoppers.

Later we built in the rear and put in two cylinders of the Chris Abele type, having stationary fronts and filling and emptying from the front end. We still used soft coal, with the fire sixteen to eighteen inches under the cylinder.

We had other machines made locally from the Carter pattern. The idea of the tight cylinder was to keep out smoke, as well as to keep in the aroma. I think we were the first to use perforations, because I remember old Jabez Burns coming along after we put in one of his machines and remarking on it. . . . We had a kind of mechanical genius for engineer at that time (he also did the roasting) and he conceived the idea that we ought to get rid of the moisture in the roasting coffee because it would cook quicker. When the holes clogged up, he put in loose pieces of wire bent at the ends which shook as the cylinder revolved and kept the holes open. Another thing, he put a hole in the cylinder head and a stopper with a string on it so he could get out a few grains at a time to note the progress of the roasting — but he judged mostly by the smoke.

The cooling box was as I have described it, but later we put in a perforated false bottom which let out some chaff and small stones.

On our first watering, we pulled out the slide and dashed in a bucket of water, then closed the slide and let it revolve outside the furnace. This was hard on the cylinder, so later we used the sprinkling can and put on water sparingly.

Once we had a party that wanted to put in a soapstone lined roaster, and another near us named Salzgerber patented a superheated-steam roaster which was shaped like our modern milk bottle. This was covered with asbestos and worked on a central bearing so it could be depressed for emptying and elevated for filling. It did good work.

Mr. Forbes' recollections of the early days of roasting and selling coffee at retail in St. Louis are so illuminating, and paint so interesting a picture of the period that they are printed here to illustrate the conditions that prevailed generally at the time when the commercial roasting machine of the United States was being developed into the modern type. He says further:

Selling roasted coffee was up-hill work, as every one roasted coffee in the kitchen oven. People were buying, say, at twenty cents. Our asking twenty-five cents "roasted" called for a lot of explanation about shrinkage, tight cylinders so the strength and flavor could not get away, etc.; while, when they roasted a pound in the oven the flavor scented the whole house, thus losing so much strength to say nothing of the unevenness of their roasts — part raw, part roasted, producing an unpleasant taste. An occasional burned roast at home helped some. They tell of a man who, going out in the back yard and kicking over a clod by accident, uncovered some burned coffee. He called to his wife and wanted an explanation. She acknowledged she had burnt it, and hid it so he would not scold. He said, "We had better buy it roasted in the future and avoid such accidents."

We roasted in the cellar. We had an elaborately polished Reed & Mann engine in one window, two brass hoppered mills in the other, and our boiler was under the sidewalk. We had a mahogany-top counter, oil paintings on the wall, and bin fronts of Chinamen, etc., done by the celebrated artist, Mat Hastings (now dead); so you see we started right.

The fight we had to introduce roasted coffee was fierce. Our argument was on the saving of fuel, labor, temper, scorched faces, and anything we could think of. We talked only three coffees, Rio, Java, and Mocha. When Santos began to come, it was hard to change them over from the rank Rio flavor to the more mild Santos. The latter they claimed did not have the rough taste. They missed it and longed for the wild tang of the Rio.

We did not import, but bought in New Orleans and from several local wholesale grocers. No one delivered. Shipments were f. o. b. St. Louis. Draying and packages were extra. Coffee was not cleaned or stoned, but was sold as it came from the sack. However, we did not use any very low grades then. If any one complained of the stones hurting their mills, we advised them to buy ground coffee, showing how it kept better ground as it was packed tight, whereas the roasted was looser and the air could get through it. It was fully a year or more before we began to sell in quantities to make it profitable. In roasting for others, we got a cent per pound; and after awhile, that became so much a business it paid all our expenses. We were the first to roast coffee by steam power west of the Mississippi and east of the Rocky Mountains.

The tea department helped us to hold out until coffee got its hold on the public; for in those days every one used tea and insisted on having it good. Price was no object. How different now!

Five years later (1862) J. Nevison, an Englishman, drifted into town and opened at 85 North Fourth Street. He got out a very bombastic circular which caused us to put out the one I enclose (illustration, page 436). Then came a party named Childs; and after him, Hugh Menown, grand-uncle of the present Menown, of Menown & Gregory; and Mat Hunt; all passed over to the Great Majority. After the Civil War they multiplied pretty fast, coming and going until now we have nineteen roasting establishments in the city.

The late Julius J. Schotten also wrote the author as follows concerning the days of the Carter roaster and of the wholesale coffee-roasting business founded by William Schotten in 1862:

In the early days, every wholesale grocer was selling coffee; the wholesale grocer controlled ninety percent of the trade in the country. It did not pay the coffee roaster to have men on the road selling coffee in those days. Such being the case, seventy-five percent of the roasting done by the coffee roasters was job roasting, at one cent a pound.

In the beginning there were only two kinds of roasted coffee known to the trade in this section of the country (St. Louis) and of course one of these brands was "Rio" — the other, "Java". The former was a genuine Rio, but the Java was mostly Jamaica coffee.

Roasted coffee then was packed (for city trade) in five and ten pound packages, and this size package seemed to supply the wants of the ordinary grocer for a week. Occasionally a twenty-five pound package, and in a few instances as much as fifty pounds of one grade was sold at a time.

The class of customers the coffee roasters sold in those days were the smaller merchants; the larger stores, having their ideas as to quality, bought their coffees green. As they had very little sale for the roasted, they would send a half-sack, and sometimes a whole sack to have it roasted. It took a number of years to induce the larger grocers, and even the average grocers, to purchase their coffee already roasted.

Coffees were roasted in the old style, "pull-out" roaster cylinder. That is to say, it was necessary to stop the roaster and to pull out the cylinder to sample the coffee in order to know when to take the coffee off the fire. When the coffee was ready to take off, the cylinder was pulled out its entire length. It was then turned

EARLY FOREIGN AND AMERICAN COFFEE-MAKING DEVICES

1 — English adaptation of French boiler. 2 — English coffee biggin. 3 — Improved Rumford percolator. 4 — Jones's exterior-tube percolator. 5 — Parker's steam-fountain coffee maker. 6 — Platow's filterer. 7 — Brain's Vacuum, or pneumatic, filter. 8 — Beart's percolator. 9 — American coffee biggin. 10 — cloth-bag drip pot. 11 — Vienna coffee pot. 12 — Le Brun's cafetière. 13 — Reversible Potsdam cafetière. 14. 15 — Gen. Hutchinson's percolator and urn. 16 — Etruscan biggin

over and a slide nine inches wide, running the full length of the cylinder, was opened and the contents were dumped in the cooling box. When the coffee reached the cooling box, it took two men with hoes or wooden shovels to stir and turn it until it was properly cooled, there being no cooling arrangements then as we have nowadays.

At that time there were no stoning or separating machines; and as a bag of the ordinary green Jamaica coffee contained from three to five pounds of stones and sticks, it was necessary to hand-pick the coffee after it was roasted.

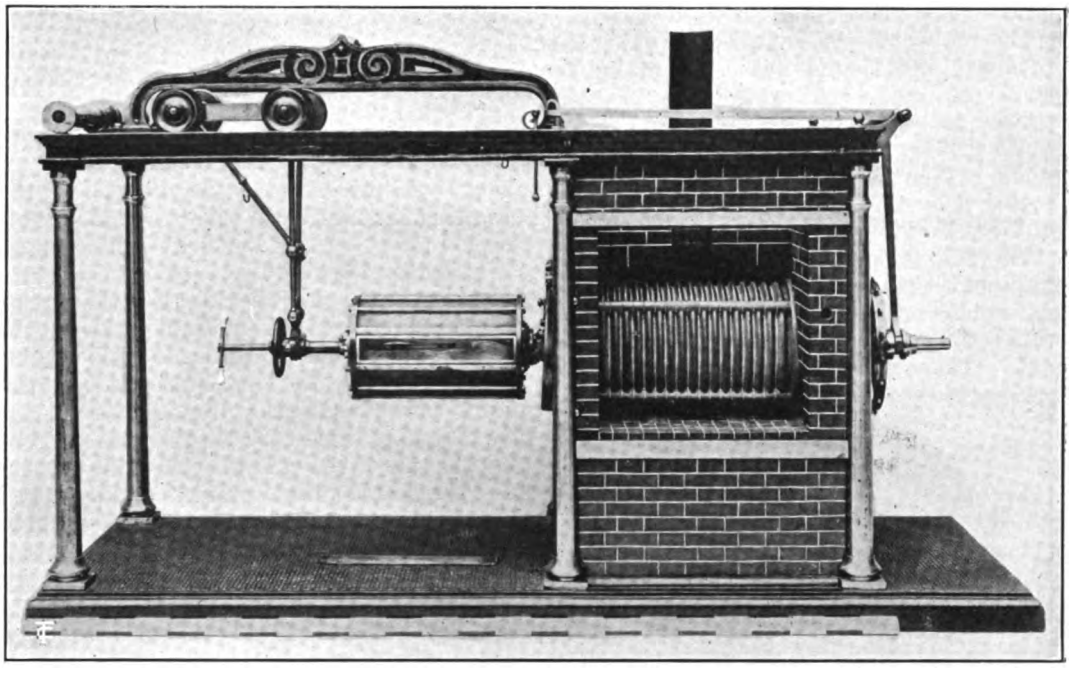
After Carter, the next United States coffee-roaster patent was granted to J. R. Remington, of Baltimore, on a roaster employing a wheel of buckets to move the green coffee beans singly through a charcoal heated trough. It never became a commercial success. (See 4, page 630.)

In 1847-48, William and Elizabeth Dakin were granted patents in England on an apparatus for "cleaning and roasting coffee and for making decoctions." The roaster specification covered a gold, silver. platinum, or alloy-lined roasting cylinder and traversing carriage on an overhead railway to move the roaster in and out of the roasting oven; and the "decoction" specification covered an arrangement for twisting a cloth-bag ground-coffee-container in a coffee biggin, or applied a screw motion to a disk within a perforated cylinder containing the ground coffee, so as to squeeze the liquid out of the grounds after infusion had taken place.

The roaster has survived, but the coffee maker was not so fortunate. The Dakin idea was that coffee was injuriously affected by coming in contact with iron during the roasting process. The roasting cylinder was enclosed in an oven instead of being directly exposed to the furnace heat. The apparatus was provided also with a "taster," or sampler, the first of its kind, to enable the operator to examine the roasting berries without stopping the machine. As will be seen by referring to the picture of the model shown, the apparatus was ingenious and not without considerable merit. Dakin & Co. are still in existence in London, operating a machine very like the original model.

In 1848, Thomas John Knowlys was granted a patent in England on a perforated roasting cylinder coated with enamel.

It is to be noted in passing that this idea of handling the green bean with extreme delicacy, evidently obtained from the French, was never taken seriously in the United States, whose inventors chose to handle it with rough courage.



THE DAKIN ROASTING MACHINE OF 1848

The first English patent on a coffee grinder was granted to Luke Herbert in 1848.

In 1849, Apoleoni Pierre Preterre, of Havre, was granted an English patent on a coffee roaster mounted on a weighing apparatus to indicate loss of weight in roasting and automatically stop the roasting process. At the same time he secured an English patent on a vacuum percolator, not unlike Durant's of 1827.

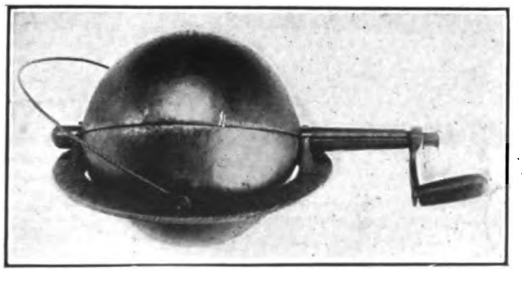
In 1849 also, Thomas R. Wood, of Cincinnati, was granted a United States patent on a spherical coffee roaster for use on kitchen stoves. It attained considerable popularity among housewives who preferred to do their own roasting. (See 6, page 630.)

In 1852, Edward Gee secured a patent in England on a coffee roaster fitted with inclined flanges for turning the beans while roasting.

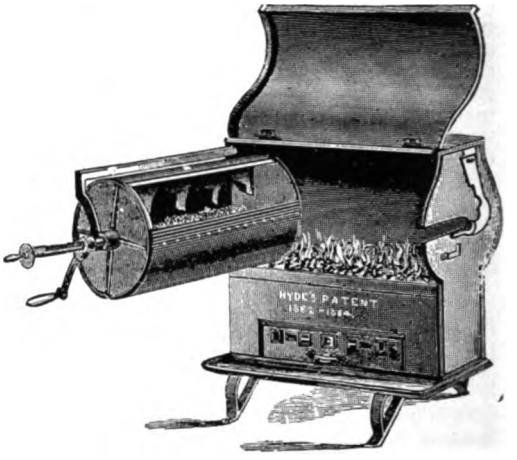
C. W. Van Vliet, of Fishkill Landing, N. Y., was granted a United States patent in 1855 on a household coffee mill employing upper breaking and lower grinding cones. He assigned it to Charles Parker of Meriden, Conn. In 1860 - 61 several United States patents were granted John and Edmund Parker on coffee grinders for home use.

In 1862, E. J. Hyde, of Philadelphia, was granted a United States patent on a combined coffee-roaster and stove fitted with a crane on which the roasting cylinder was revolved and swung out horizontally for emptying and refilling. This machine proved to be a commercial success. Benedickt Fischer used one in his first roasting plant in New York. It is still being manufactured by the Bramhall Deane Company of New York.

In 1864, Jabez Burns, of New York, was granted a United States patent on the original Burns coffee roaster, the first machine which did not have to be moved away from



A Globular Stove Roaster of 1860



Hyde's Combined Roaster and Stove

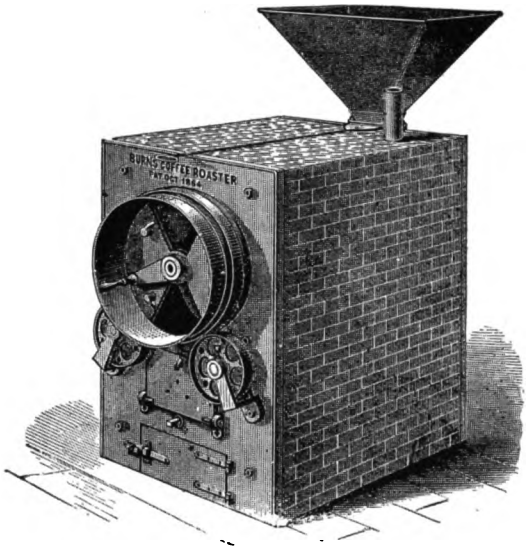
the fire for discharging the roasted coffee, and one that marked a distinct advance in the manufacture of coffee-roasting apparatus. It was a closed iron cylinder set in brickwork. (See illustration, page 635.)

Jabez Burns had been a student of coffee roasting in New York for twenty years before he produced the machine that was to revolutionize the coffee business of the United States. He had brought with him from England a knowledge of the trade in that country, where he first began his business training by selling Java coffee at fourteen cents and Sumatra at eleven cents to hotels, boarding-houses, and private families.

Up to the time of the Civil War, the contrivances employed for roasting coffee in every case necessitated the removal of the roasting apparatus — whether pan, globe, or cylinder — from the fire. The process of causing coffee to discharge from the end of the roasting cylinder at the pleasure of the operator while the cylinder was still in motion was new; and the double set of flanges to produce this effect, and at the same time, during the process of roasting, to keep the coffee equally distributed from end to end of the cylinder, was new. Some one suggested this last improvement was simply an Archimedean screw placed in a cylinder, but Mr. Burns replied: "It is a double screw, a thing never suggested by the Archimedean screw. It is, in fact, a double right and left augur, one within the other, firmly secured together and also to the shell or cylinder, and when the cylinder

revolves the desired result is obtained — the idea being entirely original."

Mr. Burns had watched the development of the coffee business from the time when the preparation of coffee was largely confined to the home, where the approved roasting implements were hot stones, or tiles, iron plates, skillets, and frying pans. Some of these were still in use twenty years after he produced his first machine; and he often said that coffee evenly roasted by such methods was just as good as if done by the best mechanical device ever invented. He also said: "Coffee can be roasted in very simple machinery. Some of the best we ever saw was done in a corn popper. Patent portable roasters are almost as numerous as rat traps or churns."



THE ORIGINAL BURNS ROASTER, 1864

He early saw the practise of domestic roasting falling into disuse, as it was becoming possible to supply the consumer with roasted coffee for only a trifle more than in the green state, with all the labor and annoyance of roasting done away with — a talking point that John Arbuckle was quick to seize upon in his first Ariosa advertising.

In almost every town of any size there were concerns engaged in the roasting business. Within a few years, Burns machines were placed in all the principal roasting centers. Pupke & Reid in New York; Flint, Evans & Co., and James H. Forbes in St. Louis; Arbuckles & Co., in Pittsburgh; the Weikel & Smith Spice Co. in Philadelphia; Theodore F. Johnson & Co., in Newark; Evans & Walker in Detroit; W. & J. G. Flint in Milwaukee; and Parker & Harrison in Cincinnati, were among his first customers.

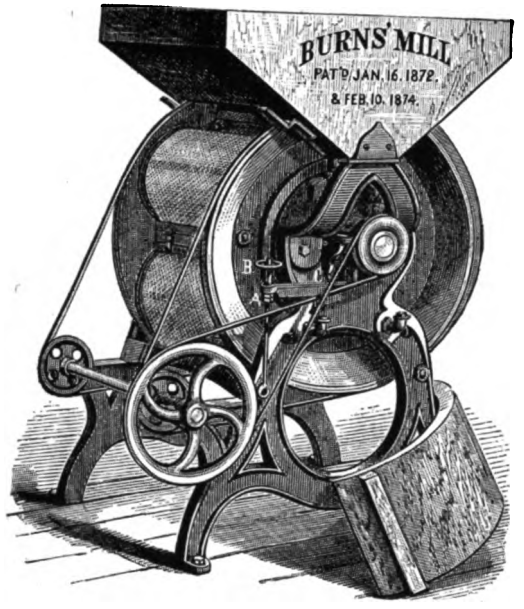
It is said that in 1845 there were facilities in and around New York to roast as much coffee as was then consumed in Great Britain. Steam power was being extensively used, and the roasting was done here for a large part of the country. The habit was to buy roasted coffee from the coffee and spice mills by the bag or larger quantity for country consumption; and the grocers and small tea stores, for local consumption, bought from twenty-five pounds upward at a time. This method cheapened the roasting of coffee to half a cent a pound; and then good profits could be made, for everything was cheap in those days. Even at that, it would have been impossible for each tea dealer to have roasted his own coffee for several times the amount, so the practise was generally adhered to all over the country.

Jabez Burns wrote in 1874:

> It is preposterous to suppose that household roasting will be continued long in any part of this country, if coffee properly prepared can be had. This is demonstrated by the remarkable advances made in Pittsburgh and other places, where only a few years ago the sales were chiefly in green coffee. Now the amount roasted in Pittsburgh alone by those who make a business of it, exceeds the entire consumption of coffee of any kind in the United States fifty years ago. It will never pay for small stores to roast if the large manufactories will do the work well, and if they will not, small dealers will add proper machinery, and will eventually become strong competing dealers. By doing the work with proper care they will not only secure a reputation with large sales for themselves, but will command the roasting for other parties.

Until the Burns roaster appeared, coffee roasters were usually cylinders that revolved upon an axis; the other devices that were tried were not successful. Jabez Burns thus describes the first roaster he ever saw at Hull, England:

> It consisted of a furnace, open at the top, and a perforated cylinder with a slide door. The axis, or shaft, of the cylinder had bearings on a frame which passed outside the furnace, while the cylinder went down into the fire pit, the top of which could be covered over. In this position it could be turned by means of a crank on the end of a shaft. The only means of testing was by the escape of the steam or aroma, whichever predominated, passing out through the perforations at the top; but so expert was the operator and so quick to detect the aroma, that



BURNS GRANULATING MILL, 1872-74

he seldom had to return the cylinder to the fire to produce a satisfactory roast. This man roasted fifty pounds or less in a batch for a number of retail stores.

Globes, consisting of two hemispheres, made of cast iron and so arranged that they opened to fill and discharge, but operated substantially as above, only with the method of lowering into the fire changed somewhat, I have seen in use in Scotland in 1840. They were called French roasters.

In this country a few years ago the use of the long sheet-iron cylinder was almost universal, varying only in the method of placing the cylinder over the fire — some sideways on a track, others endwise, sliding on a long shaft or by turning on a crane, in either case causing considerable labor and loss of time, which often resulted in the hands of the inexperienced in more or less spoiling the batch of coffee.

From his expert knowledge of coffee and coffee-roasting problems, Jabez Burns quickly rose to a commanding position in the industry. He was a trade teacher and a trade builder. He had very definite ideas on roasting. He said:

The object of roasting is not attained until all the moisture (water of vegetation) is driven off. Roast properly — uniformly and sufficiently — and you will get all the aroma there is in the bean. Coffees of various kinds can not be roasted to a uniform color. Some will be of a light shade when sufficiently roasted while others will have to be roasted dark to develop the aroma. Therefore, appearance alone is not a proper test. Aroma-saving devices have had their day. Coffee is of no use unless the aroma is fully developed, and the more it is developed by roasting the better it is. What passes off in the roasting process can not be saved and is so small that if all of it in the country could be collected and freed of all foreign matter, it would not weigh an ounce.

Roast coffee over a slow fire so that it will be an hour before it has the color of roasted coffee, and, in contrast, produce in another batch of like quantity the same color in thirty minutes, and it will be found for all intended purposes, either to grind, sell or drink, that the latter will be, beyond all comparison, the best. Coffee should be roasted uniform and as quickly as possible, only it must not be scorched or spotted, otherwise it will have a bitter burned taste. If roasted properly it will very considerably increase its bulk and will be plump, swelled out and crisp; easily crushed in the hand or between the fingers.

In his *Spice Mill Companion*, published in 1879, Jabez Burns said further in regard to roasting:

All coffees do not roast alike; some will be a bright light color when done, and others will be dark before done. There are two infallible rules, which if properly appreciated and tried will prove to be practically useful. One is, when the aroma is sufficiently developed to produce a sharp, cutting, but aromatic sensation in the nose. Those who practice that way do not need to see the roast. The other rule is that when a berry is broken it is crisp and uniform in color inside and out. Those who are accustomed to this method may be good coffee roasters, albeit they may not have any nose at all. But we must state in this connection, that a man who has no smell and is color blind is not a fit candidate for the coffee roasting profession; and, moreover, we affirm that any person who can not roast coffee, so far as judgment is concerned, after a few trials, will never make a good operator.

In 1867, Jabez Burns was granted a United States patent on an improved coffee cooler, mixer, and grinding mill, or granulator. Another granulator patent was issued to him in 1872. Mr. Burns had also given the subject of cooling coffees considerable study, and his cooler was the result. He argued that it was necessary to cool quickly. Before his day, various methods had been employed, such as placing the coffee in revolving drums covered with wire cloth. Sometimes a draft of cold air was applied to the cooling drums, and the dirt and chaff blown through the wire cloth. It was also customary in wholesale establishments to blow cold air up through a perforated bottom, and this had been found effective when properly applied. The Burns idea was to cool by means of suction, causing a downward draft through the coffee and wire-cloth bottomed box, which was found to be more uniform and efficient for cooling purposes, as well as in controlling smoke, heat, and dust, which by this means

could be blown out of the roasting room by any convenient outlet.

On the subject of grinding, likewise, Mr. Burns had reached some definite conclusions. The French and English lap and wall mills, the English steel mills, and the Swift mills were all used in the United States. Troemner's, the Enterprise, and others — to be mentioned later in chronological order — were extending their use in a retail way; but Jabez Burns confined his attention to a practicable mill for wholesale grinding establishments.

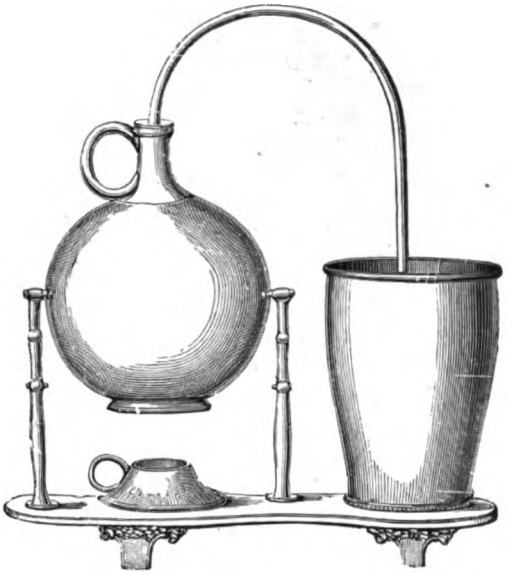
For manufacturing purposes, burstone mills were for many years exclusively employed, especially one first known as the Prentiss & Page, and later as the Page mill. There was a time when all the coffee establishments in New York sent their coffee to Prentiss & Page to be ground. Some of the places roasted by hand, others by horse power; and if by steam, it was limited, and they did not have enough to spare for grinding.

With the march of improvement, burstone mills went into the discard. The difficulty lay in finding men experienced in stone dressing to run them; and the demand grew for a better style of grinding than could be done in a mill out of face and balance. This demand was met in an altogether different style of machine, which for twenty-five years was well known as the Barbor mill. It was for improvements on this mill that Jabez Burns in 1867, 1872, and 1874 obtained his granulator patents.

The mill comprised cutters in the form of an iron roller running in near contact with a concave, also of iron, and a revolving cylinder provided with sieves, or screens, that received the ground material, rolled it over the wire surface, sifting out the fine and discharging the coarse automatically into the cutter, to be again manipulated until it was fine enough to pass through the meshes of the screen.

Jabez Burns patented an improved form of his roaster in 1881, and a sample-coffee roaster in 1883, before he died in 1888; and since that time his sons, who continue the business, have perfected a number of improvements and brought out new machines which will be referred to in chronological order.

James H. Nason, of Franklin, Mass., was granted a United States patent in 1865 on a percolator with fluid joints.



NAPIER'S VACUUM MACHINE, 1840

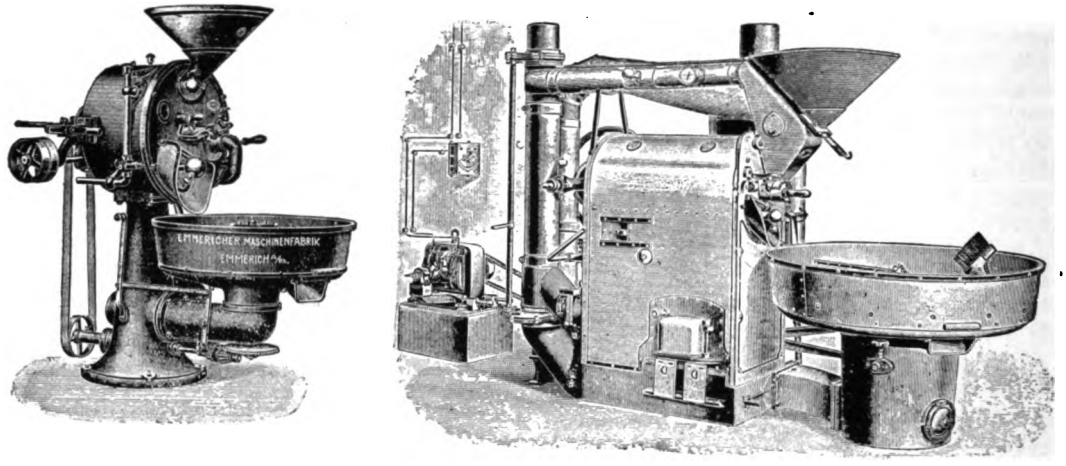
P. H. Vanderweyde, of Philadelphia, was granted United States patents in 1866 on a percolator and a continuous coffee-filtering machine.

Raparlier was granted a French patent on a pocket coffee-making device in 1867. In later years, his invention became very popular among French coffee drinkers. It was one of the early practicable forms of double-glass-globe filtration devices.

E. B. Manning of Middletown, Conn., was granted his first patent on a tea and coffee pot in 1868. Others followed in 1870 and 1876. In the latter year, John Bowman brought out the valve-type percolator which subsequently attained great favor in American households.

Thomas Smith & Son (Elkington & Company, Ltd., successors) began to manufacture at Glasgow, Scotland, about 1870, the Napierian vacuum coffee machine which had been invented in 1840 — but never patented — by Robert Napier of the celebrated firm of Clyde shipbuilders. This machine makes coffee by distillation and filtration. It employs a metal globe, and a brewer from which the coffee is syphoned over into the globe through a tube, around the strainer-end of which, as it rests in the coffee liquid in the brewer, there is tied a filter cloth. It is still being manufactured by Elkington & Company.

Thomas Page, a New York millwright, began the manufacture of a pull-out coffee



GERMAN GAS AND COAL ROASTING MACHINES
Left, Perfekt gas roaster — Right, Probat coal roaster

roaster similar to the old Carter machine, in 1868. Later, Chris Abele, who was foreman in the Page shop, succeeded to the business; and in 1882, he was granted a United States patent on an improvement on a coffee roaster similar to the original Burns machine (the patent had then expired) which he marketed under the name of Knickerbocker.

German Coffee Machinery

The Germans first began to show an active interest in coffee machinery in 1860. In that year, Alexius Van Gulpen, of Emmerich, produced a green-coffee grader; and later (1868), in partnership with J. H. Lensing and Theodore von Gimborn, began the manufacture of coffee-roasting machines. From this start there developed in Emmerich quite an industry in coffee-machinery building. In 1870, Alexius Van Gulpen introduced to the German trade a globular coffee roaster employing wood and coke as fuel and having perforations and an exhauster. Van Gulpen and von Gimborn are the two names most often met with in the development of German coffee-roasting machinery.

The first recorded German patent on a coffee roaster was issued to G. Tubermann's Son in 1877, for "a coffee burner with vertically adjusted stirring works." German patents were issued in 1878 to R. Muhlberg, of Taucha, for coffee roasters with movable partitions and "screw-shaped declining walls." Six roaster patents were issued to other inventors in 1878 - 79.

Peter Pearson, of Manchester, took out a German patent on a coffee-roasting apparatus in 1880. Fleury & Barker, of London, were granted a coffee-roaster patent in Germany in 1881.

After 1870, Van Gulpen devoted himself to the cylinder type of roaster, on which he obtained several patents. The partnership between Messrs. Van Gulpen, Lensing and von Gimborn was dissolved in 1906. They were succeeded by the Emmericher Maschinenfabrik und Eissengiesserei, and Van Gulpen & Co. Van Gulpen died in 1920. Among his inventions were a circular air fan to supply fresh air to the beans while roasting; a fire-dampening device; roasting and cooling exhausters; and a "withdrawable" mixer remaining inside the cylinder during the roasting process, but designed to be withdrawn at the end, discharging the contents with a jerk into a circular cooler. These improvements are featured in Van Gulpen & Co.'s latest Meteor machine. They make also the Typhoon and Comet machines, and a line of globular roasters.

A dozen coffee-roaster patents were issued in Germany in 1880 - 82. Among them was one to the Emmerich Machine Factory and Iron Foundry, Van Gulpen, Lensing & von Gimborn, Emmerich, in 1882.

Numerous coffee-cooling, coffee-grinding, and coffee-making devices were patented in Germany from 1877 to 1885; among them Newstadt's coffee-extract machine in 1882, safety attachments, rapid filters, Vienna coffee makers, etc. The first Vienna coffee

maker seems to have been patented in Germany in 1879.

The Emmerich Machine Factory and Iron Foundry acquired certain Danish and Austrian coffee-roaster patents in 1881, and in 1892 it was granted a German patent on a ball roaster. In the eighties this concern began the manufacture of a closed ball, or globular, roaster with gas-heater attachment. It acquired, in 1889, the rights for Germany to manufacture gas roasters under the Dutch Henneman patents of 1888. In 1892, Theodore von Gimborn was granted French and English patents on a coffee roaster employing a naked gas flame in a rotary cylinder. In 1897, the Emmericher concern was granted a German patent on an automatic circular tipping cooler with power drive. Today, this factory features the Probat and Perfekt roasters, but manufactures a general line of cylinder and ball machines for coal, coke, and gas.

Among others engaged in the manufacture of coffee machines in Germany are G. W. Barth, Ludwigsburg, and Ferd. Gothot, Mulheim on Rhur. The latter manufactures a coke or gas heated quick-roaster known as the Ideal-Rapid, and a smaller hand-power machine, of the same type, called Favour.

American, French, and British Machines

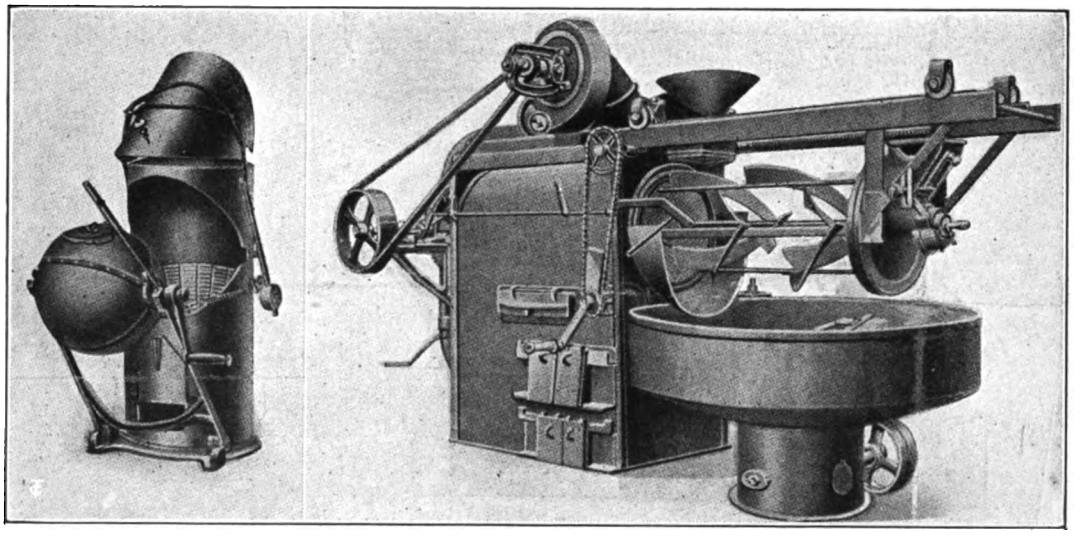
In 1869, Élie Moneuse and L. Duparquet, of New York, were granted three United States patents on a coffee pot or urn made of sheet copper and lined with pure sheet block tin. These patents were the foundation of the successful coffee-urn business afterward built up under the name of the Duparquet, Huot & Moneuse Co.

Thomas Smith & Son (Elkington & Co., Ltd., successors) began, in 1870, the manufacture of the Napierian coffee-making machine at Glasgow, Scotland. This was a device for making coffee by distillation, employing a metal globe syphon and brewer with filter cloth. The principle was subsequently used in the Napier-List steam coffee machine for ships and institutions, patented in England in 1891.

John Gulick Baker, of Philadelphia, one of the founders of the Enterprise Manufacturing Co. of Pennsylvania, was granted a United States patent in 1870, on a coffee grinder introduced to the trade as the Enterprise Champion No. 1 store mill. Another Baker patent was granted in 1873, and this became known as the Enterprise Champion Globe No. 0. These mills were the pioneer machines for store use.

In 1870, Delphine, Sr., of Marourme, France, was granted a French patent on a tubular coffee roaster which turned over a flame.

In the sixties and seventies, French inventors became quite active on coffee-roaster improvements. Many patents were granted, and quite a few were for practical small-capacity machines that have survived, and



OTHER GERMAN COFFEE ROASTERS
Left, globular machine — Right, Meteor quick-roasting outfit

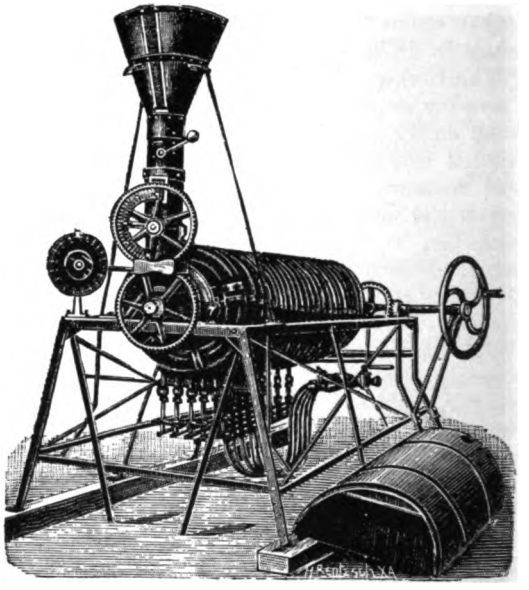
are in use today in France and on the continent. Some supplied inspiration for inventors in neighboring countries. Among the more notable names, mention should be made of Martin, of St. Quentin, who produced a sheet-iron cylinder roaster with "interior gatherer" in 1860; Marchand, of Paris, "fan roaster with movable fire box," 1866 and 1869; Lauzaune, Paris, "rocking system of roasting coffee in a round stove," 1873; Ittel's glass sphere, Lyons, 1874; and Marchand and Hignette, Paris, 1877, a ball coffee roaster.

Evolution of the Gas Roaster

According to the patent records, Roure, of Marseilles, appears to have produced the original gas coffee roaster in 1877. The evolution of the gas roasting-machine was as follows:

In 1879. H. Faulder, of Stockport, England, obtained an English patent on an external air-blast burner applied to a cylinder gas machine, which is still being manufactured by the Grocers Engineering and Whitmee, Ltd., of London. Fleury and Barker, of London, followed with another

ORIGINAL ENTERPRISE MILL



MAX THURMER'S QUICK GAS ROASTER

English gas machine in 1880, the heat being supplied from gas jets over the roasting cylinder. In 1881, Peter Pearson, of Manchester, produced a gas roaster which consisted of a wire-gauze cylinder revolving under a metal plate heated by gas.

Beeston Tupholme, of London, was granted an English patent in 1887, on a direct-flame gas roaster which he assigned to Joseph Baker & Sons.

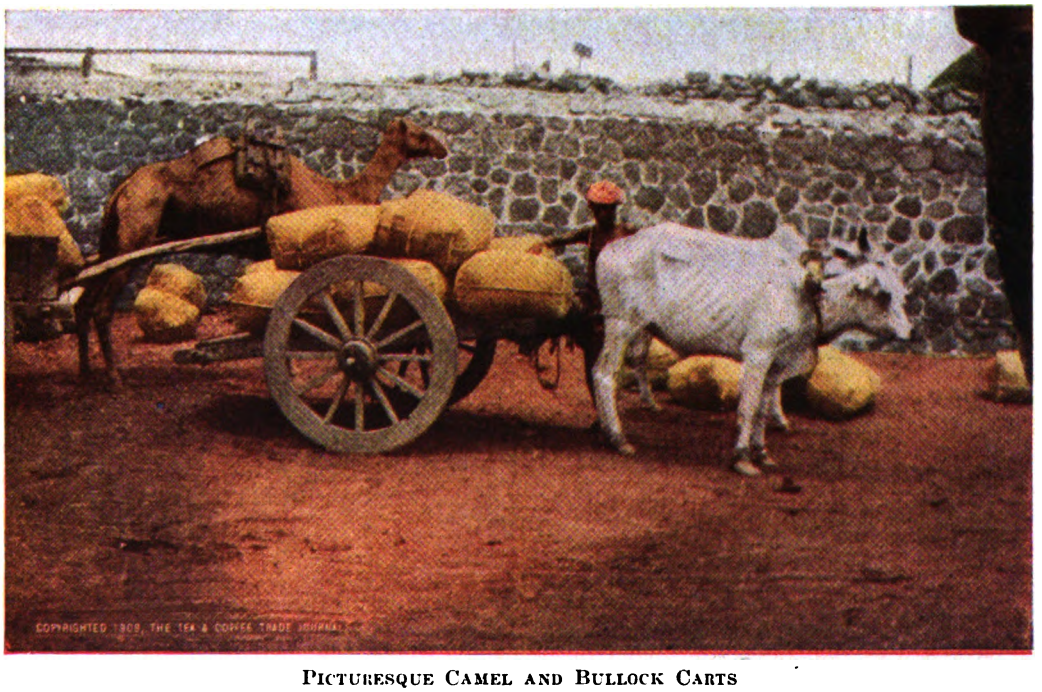
Karel F. Henneman, the Hague, Netherlands, took out his first patent on the Henneman direct-flame gas roaster in Spain in 1888; and the following year, he obtained patents in Belgium, France, and England. His United States patents were granted in 1893 - 95.

Postulart secured a patent in France for a gas coffee roaster in 1888.

The Germans also began, in the eighties, to take the quick gas coffee roaster seriously. In 1889, Carl Alexander Otto, of Dresden, secured a German patent on a spiral tubular machine to roast coffee in three and a half minutes. It was first manufactured and sold by Max Thurmer, of Dresden, in 1891 - 93.

The subject of quick roasting has greatly agitated German and French coffee men. Otto found that coffee roasted in small quantities (say fifty grams) on a sample-roaster produced a finer flavor and aroma than that roasted in the big machines. He

LOADING COFFEE ON ZAMBOEKS AT HODEIDA
These boats then transfer their cargoes to steamships lying in the roads



PICTURESQUE CAMEL AND BULLOCK CARTS
Used for local coffee transport in Aden and Hodeida

PRIMITIVE TRANSPORTATION METHODS IN ARABIA

set out to produce a machine that would roast continuous small quantities in the shortest time. He built the first commercial machine under his patent in 1893. It was shown at the International Food Exhibition in Dresden in 1894. The latest type manufactured by Max Thurmer, Dresden, in which firm Otto is a partner, has a spiral five meters long and an hourly production of about 450 pounds. The Thurmer machine, as it is called, has been sold to the trade since 1914.

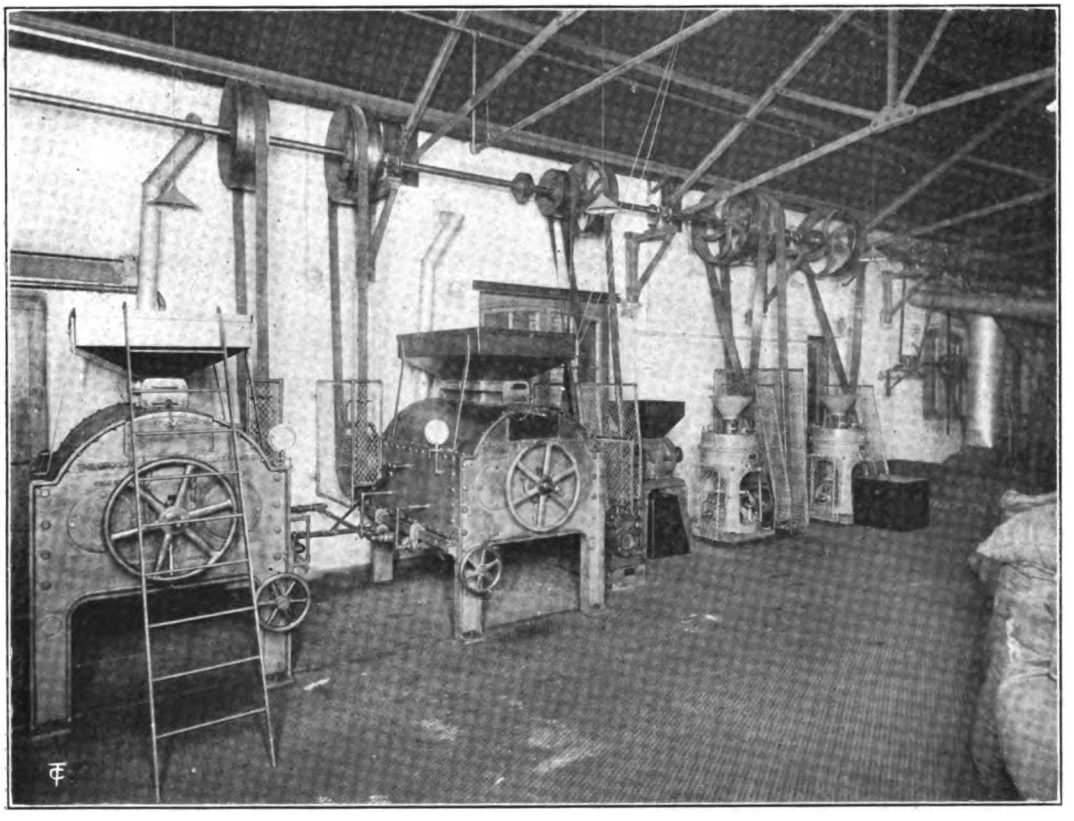
Quick roasting is gone in for quite extensively in Germany, even in the big trade-roasting plants, where machines to roast in ten to seventeen minutes are common. Natural, slow cooling is most necessary with quick roasting, according to Thurmer. On the other hand, A. Mottant, of Paris, who also manufactures a line of quick gas-roasting machines, called Magic, argues that quick cooling is essential after quick roasting. Three of the Mottant machines are illustrated on pages 642 and 644.

Other quick-roasting machines of German make are the Combinator, Tornado, and Rekord.

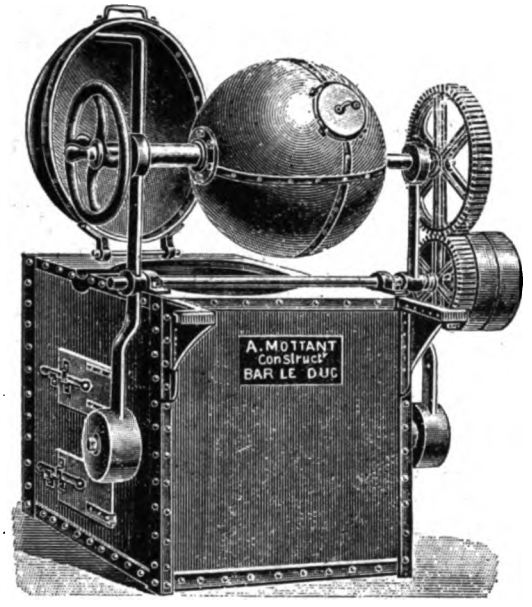
In a lecture before the Society of Medical Officers of Health, London, October 24, 1912, William Lawton demonstrated to the satisfaction of his audience that coffee could be roasted in 3 minutes, using a perforated gas-roaster of his own invention.[4]

The first direct-flame gas coffee roaster in America was installed in the plant of the Potter-Parlin Co., New York, by F. T. Holmes, in 1893. This was Tupholme's machine, patented in England in 1887, and in the United States in 1896-97. The Potter-Parlin Co. subsequently placed the Tupholme machines throughout the United States on a daily rental basis, limiting its leases to one firm in a city, having obtained the exclusive American rights from the Waygood, Tupholme Co., now the Grocers Engineering and Whitmee, Ltd.

[4] *Tea and Coffee Trade Jour.*, 1912 (vol. xxiii: no. 6: p. 592).



AN ENGLISH GAS COFFEE-ROASTING PLANT
The machines are the Morewood (improved Faulder) sliding-burner indirect type



FRENCH GLOBULAR ROASTER

Natural gas was first used in the United States as fuel for roasting coffee in 1896, when it was introduced under coal roasting cylinders in Pennsylvania and Indiana by improvised gas burners.

Edwin Crawley and W. T. Johnston, Newport, Ky., assignors to the Potter-Parlin Co., New York, were granted four United States patents on gas coffee-roasting machines.

In 1897, a special gas burner, not to be confused with the direct-flame machine, was first attached to a regular Burns roaster in the United States, and was made the basis of application for a patent.

In 1897-99, David B. Fraser, of New York, began to market in the United States a central-heated gas-fuel machine with an inner wire-cloth cylinder to keep the coffee from dropping into the flame, developed under United States patents granted to Carl H. Duehring, of Hoboken, in 1897, and to D. B. Fraser in 1899.

M. F. Hamsley, of Brooklyn, was granted a United States patent on an improved direct-flame gas roaster in 1898.

Ellis M. Potter, New York, was granted in 1899, a United States patent on an improved direct-flame gas roaster in which the flame was spread over a large area to avoid scorching and to insure a more thorough and uniform roast. In the Tupholme machine, the gas flame entered at one end, and the smoke and flame went out through a stack on top. In the Potter machine, the stack was put on the end opposite the gas intake, with a fan to pull the flame all the way through.

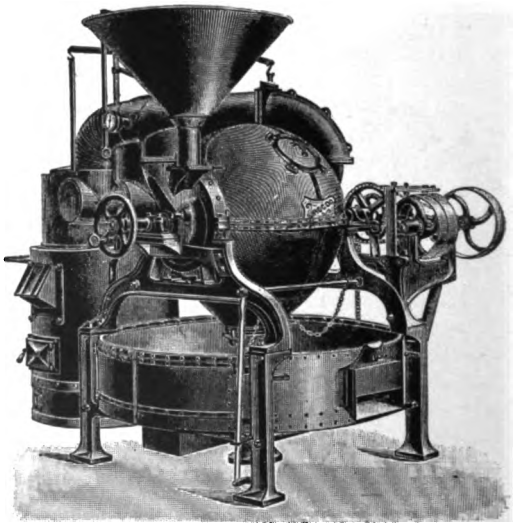
The Burns direct-flame gas roaster, with patented swing-gate head for feeding and discharging, was introduced to the trade in 1900. The Burns gas sample-roaster followed.

In 1901, Joseph Lambert, of Marshall, Mich., introduced to the trade one of the earliest indirect gas roasting machines.

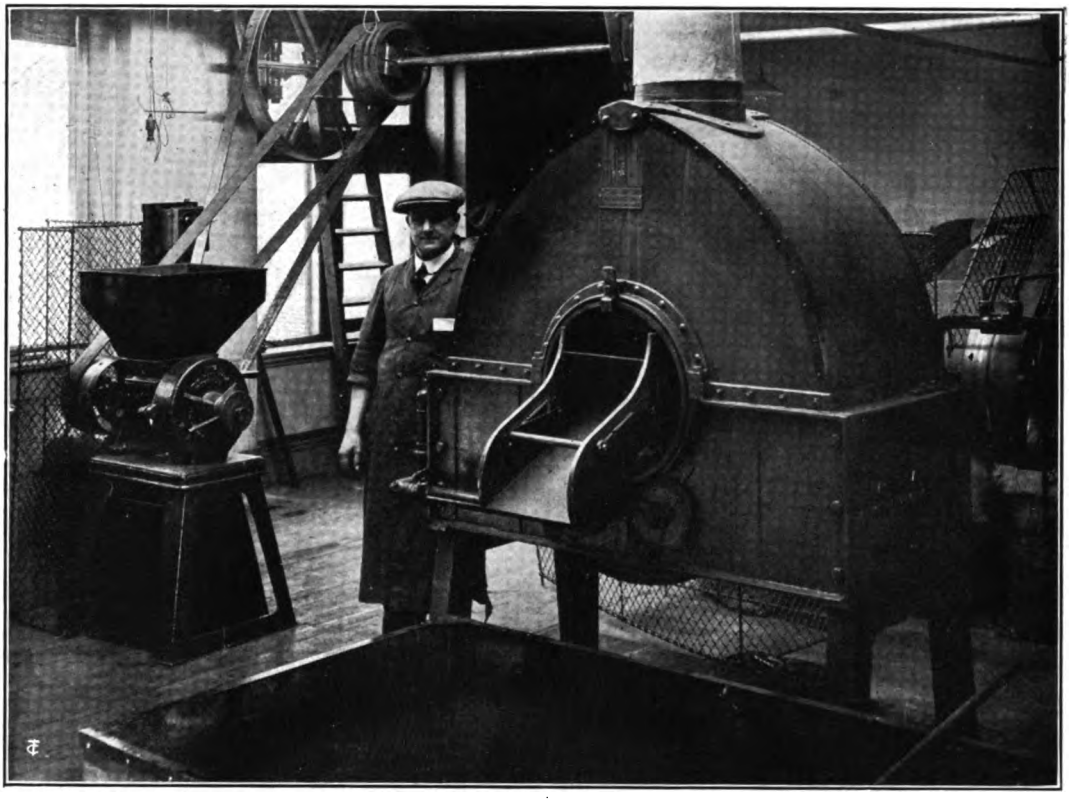
In 1901, also, T. C. Morewood, of Brentford, England, was granted an English patent on a gas roaster fitted with a sliding burner and a removable sampling tube. This machine is now being made by the Grocers Engineering and Whitmee, Ltd.

In the same year, 1901, F. T. Holmes, formerly with the Potter-Parlin Co., joined the Huntley Manufacturing Co., Silver Creek, N. Y., which then began to build the Monitor direct-flame gas coffee roaster. Mr. Holmes still further improved the Tupholme idea by putting gas burners in both ends of the roasting cylinder, with the pipes bent down so as to cause the gas flame to go first to the bottom and then up to the stack on top. This improvement was never patented.

The Henneman direct-flame gas roaster was introduced to the United States trade in 1905, by C. A. Cross & Co., wholesale grocers, of Fitchburg, Mass. It was mar-



SIROCCO MACHINE (FRENCH)



ENGLISH ROASTING AND GRINDING EQUIPMENT
Showing one 168-pound Simplex gas roaster, with a Rapid disk grinding machine having a capacity of 300 to 400 pounds per hour

keted here seven years, but was never a great success.

In 1906, F. T. Holmes was granted a United States patent on a coffee roaster which he assigned to the Huntley Manufacturing Co.

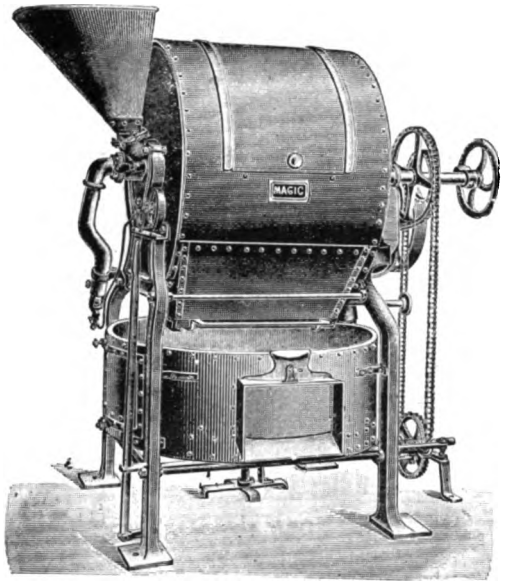
J. C. Prims, of Battle Creek, Mich., was granted a United States patent in 1908, on a corrugated cylinder improvement for a gas and coal roaster designed for retail stores. The A. J. Deer Co., Hornell, N. Y., acquired this machine in 1909, and began to market it as the Royal coffee roaster. An improvement patented in 1915 by J. C. Prims was assigned to the A. J. Deer Co.

In 1915, and again in 1919, Jabez Burns & Sons, New York, patented their Jubilee roaster, an inner-heated machine in which the gas is burned inside a revolving cylinder in a combustion chamber protected from direct coffee contact. The heat is deflected downward and then passes upward through the coffee.

In 1919, William Fullard (*d.* 1921), of Philadelphia, was granted a United States patent on a "heated fresh air system" roaster, in which the fresh air is forced by an electric fan through a pipe to a set of coils over gas, coal, or oil flame. At the top of the coils is a manifold, the hot air being forced through small holes to circulate in and around a regulation perforated roasting cylinder; the vapors and spent air are then drawn into an overhead exhaust pipe that connects with a pipe provided with a fresh-air intake, the idea being to return them to the roasting cylinder after being mixed with fresh air and heated in the coils as before. This patent has not been successfully marketed at the time of writing. The purpose is to roast by heated air not mixed with any furnace gases. Whether this can be done with sufficient fuel economy, and whether coffee thus roasted would have any greater value, are questions that are raised by the coffee experts.

Coffee-Grinding and Coffee-Making Chronology

To return to our coffee-grinding and coffee-making chronology, it is to be noted



MAGIC GAS MACHINE (FRENCH)

that in 1875 - 76 - 78, Turner Strowbridge, of New Brighton, Pa., was granted three United States patents on a box coffee mill, first made by Logan & Strowbridge, later the Logan & Strowbridge Iron Company, the latter being succeeded by the Wrightsville Hardware Co. in 1906.

In 1878, a United States patent was issued to Rudolphus L. Webb, assignor to Landers, Frary & Clark, New Britain, Conn., on an improved box coffee grinder for home use.

In 1878, and in 1880, United States patents were issued to John C. Dell of Philadelphia on a store coffee mill.

In 1879, and in 1880, United States patents were issued to Orson W. Stowe, of the Peck, Stowe & Wilcox Co., Southington, Conn., on a household coffee mill.

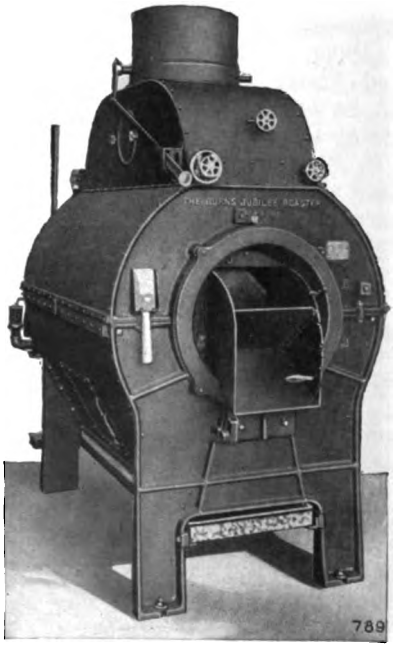
In 1879, Charles Halstead, of New York, was granted the first United States patent on a metal coffee pot having a china interior. It was an infuser for home use.

In 1880, coffee pots, with tops having muslin bottoms for clarifying and straining, were first made in the United States by the Duparquet, Huot & Moneuse Co., of New York.

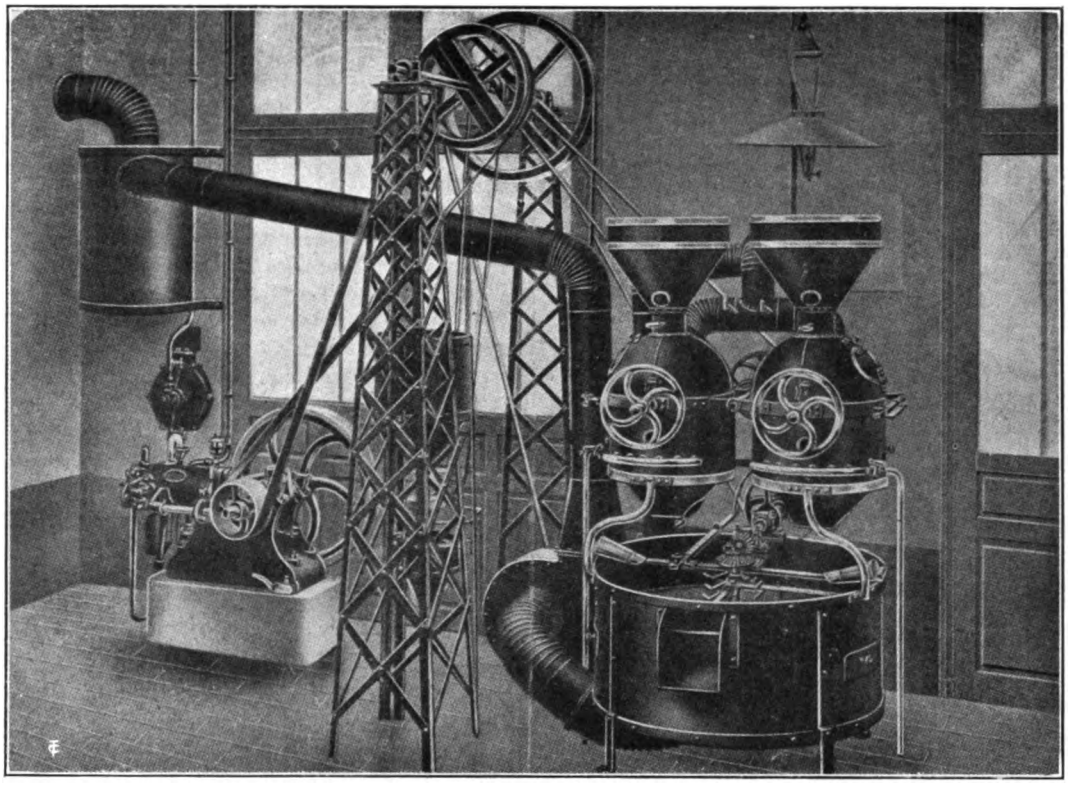
The name Hungerford first appears in the United States patent records in 1880 - 81, in connection with patents granted to G. W. and G. S. Hungerford on machines for cleaning, scouring, and polishing coffee. In 1882, the Hungerfords, father and son, brought out a roaster. This machine and the one patented by Chris Abele, of New York, already referred to, were constructions resulting from the expiration of the original Burns patent of 1864. In 1881, Jabez Burns patented the improved Burns roaster, comprising a turn-over front head serving for both feeding and discharging. Additional United States coffee-roaster patents were issued to G. W. Hungerford in 1887 - 89. In the latter year, David Fraser, who came to the United States from Glasgow in 1886, established the Hungerford Co., succeeding the business of the Hungerfords, and later being granted certain United States patents, already mentioned. In 1910, the Hungerford Co. business was discontinued in New York; and David B. Fraser moved to Jersey City, where he continued to operate as the Fraser Manufacturing Co. This business was discontinued in 1918.

Chris Abele was an active competitor of the Hungerfords and of the Fraser Manufacturing Co.; and his Knickerbocker roaster was sold over a wide territory. He died in 1910; and his son-in-law, Gottfried Bay, succeeded to the business.

In 1881, the Morgan Brothers, Edgar H. and Charles, began the manufacture of household coffee mills, the business being



BURNS JUBILEE GAS MACHINE



DOUBLE AROMATIC GAS ROASTING OUTFIT (FRENCH)

acquired in 1885 by the Arcade Manufacturing Co., of Freeport, Ill. The latter concern brought out the first pound coffee mill in 1889. Its mills became very popular in the United States. In 1900, Charles Morgan was granted a United States patent on a glass-jar coffee mill, with removable glass measuring cup.

In 1881, Harvey Ricker, of Brooklyn, later of Minneapolis, introduced to the trade in the United States a "minute coffee pot" and urn known as the Boss, the name being subsequently changed to Minute. He improved and patented the device in 1901 as the Half-Minute coffee pot. It is a filtration device employing a cotton sack with a thickened bottom.

In 1882, Chris Abele, of New York, patented an improvement on the old-style Burns roaster, with openings cut in the front plate. It was known as the Knickerbocker. As already noted, the machine was a competitor of the Hungerford machine patented the same year.

In 1882, a German patent was granted to Emil Newstadt, of Berlin, on one of the earliest coffee-extract machines.

In 1883, Jabez Burns was granted a United States patent on his improved sample-coffee roaster.

In 1884, the Star coffee pot, later known as the Marion Harland, was introduced to the trade. It employed a wire-gauze drip device, called a "filter," which was fitted to a metal pot. It was extensively advertised and attained considerable popularity. The same year, Finley Acker, of Philadelphia, brought out an improved coffee pot for family trade. Later, he produced his Mo-Kof-Fee pot and an individual porcelain drip pot for testing-table use.

In 1885, F. A. Cauchois, New York, brought out an improved porcelain-lined urn.

In 1887 - 88, the Etruscan coffee pot was invented and put on the market by the Etruscan Coffee Pot Co., of Philadelphia. It employed a muslin cylinder with metal ends and a mechanism for combining "agitation, distillation and infusion." It was not unlike the Dakin device of 1848, previously mentioned.

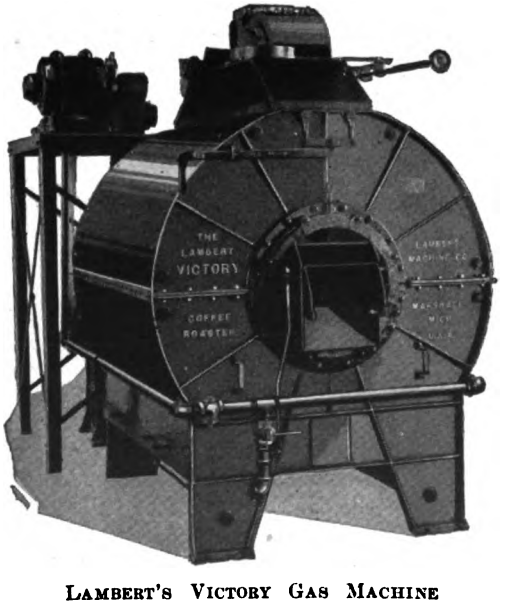
In 1890, A. Mottant, Bar-le-Duc, France, began to manufacture a line of coffee-roast-

ing machinery which included vertical ball-and-cylinder machines, using wood, coal, coke, or gas for fuel. His best known makes are Magic and Sirocco (see page 642).

Before 1895, the commercial roaster was little used in France. Since then, the industry has developed, but without displacing the smaller roaster for family use. Ball roasters are popular with shopkeepers, especially the variety manufactured by the Établissements Lauzaune at Paris, and known as Aromatic, being equipped with electric motors. This firm builds also a larger machine known as Moderne.

Other makes of roasters that have attained prominence in France are the Lambert, equipped with a steam condenser; Van den Brouck's, having the roasting cylinder lined with wire gauze; and Resson's machine for wholesale plants.

The French led off with glass-cylinder roasters for home use in the early seventies. They are still popular. One of the developments of the last decade was known as the Bijou, and was operated by clock work. A similar automatic machine, made of glass, was manufactured and sold in New York in 1908 under the name of the Home roaster. As late as 1914, an American inventor produced a home roaster for use in a stove hole. This device had a stirrer in the cover to be rotated by hand. A similar device was sold in 1917 under the name Savo. Home roasting, however, has become a lost art in America.



LAMBERT'S VICTORY GAS MACHINE

In 1897, Joseph Lambert, of Vermont, began the manufacture and sale in Battle Creek, Mich., of the Lambert self-contained coffee roaster without the brick setting then required for coffee-roasting machines. In 1900, he was joined by A. P. Grohens. In 1901, the Lambert Food and Machinery Co. was organized. In 1904, the company was re-organized. Since then, many improvements have been made under Mr. Grohens' direction. The Lambert gas roaster, one of the first machines employing gas as fuel for indirect roasting, dates back to 1901, as previously mentioned. The Economic roaster is Mr. Grohens' latest development for coal or coke fuel. It is a compact self-contained equipment operating in connection with a new-type rotary cooler. He has also recently (1922) brought out a gas-fired, electrically operated 600-pound Victory roaster and a fifty-pound miniature coffee-roasting plant designed for retail stores.

In 1897, the Enterprise Manufacturing Co. of Pennsylvania was the first regularly to employ electric motors for driving commercial coffee mills by means of belt-and-pulley attachments.

In 1898, the Hobart Manufacturing Co., of Troy, Ohio, introduced to the trade another early coffee grinder connected with an electric motor and driven by belt-and-pulley attachment.

In 1900, the first gear-driven electric coffee grinder was put on the market by the Enterprise Manufacturing Co. of Pennsylvania.

In 1902, the Coles Manufacturing Co., (Braun Co., successor) and Henry Troemner, of Philadelphia, began the manufacture and sale of gear-driven electric coffee grinders.

In 1905, the A. J. Deer Co., Buffalo, N. Y., (now at Hornell, N. Y.) began to sell its Royal electric coffee mills direct to dealers on the instalment plan, revolutionizing the former practise of selling coffee mills through hardware jobbers.

In 1905, H. L. Johnston was granted a United States patent on a coffee mill. He assigned the patent to the Hobart Manufacturing Co.

In 1900, Charles Lewis was granted a United States patent on an improved reversible filtration coffee pot known as the Kin-Hee. This pot has since been further improved, and the patent rights sold in several foreign countries. It employs a

filter cloth in place of the metal or china strainer used in the French drip pot.

In 1901, Landers, Frary & Clark's improved Universal percolator was patented in the United States. This pot has proved to be one of the most popular percolators on the American market. This firm brought out the Universal Cafenoira, a double glass filtration device, in 1916. It is covered by design and structural patents issued in 1916 and 1917.

In 1900, the Burns swing-gate sample-roasting outfit was patented in the United States.

In 1901, Robert Burns, of New York, was granted two United States patents on a coffee roaster and cooler.

In 1901, Freidrich Kuchelmeister, Brux, Austria-Hungary, was granted a United States patent on a coffee roaster having a double-walled drum, the inner being of wire gauze, and the outer of solid iron, designed to prevent scorching of the beans.

In 1902, W. M. Still & Sons, London, were granted an English patent on a steam coffee-making machine employing twelve ounces of coffee to the gallon.

In 1902, T. K. Baker, of Minneapolis, was granted two United States patents on a cloth-filter coffee-making device.

In 1903, A. E. Bronson, Jr., assignor to the Bronson-Walton Company, Cleveland, Ohio, was granted a United States patent on a coffee mill.

In 1903, John Arbuckle was granted a United States patent on a coffee-roasting apparatus employing a fan to force the hot fire gases into the roasting cylinder. From this was developed the Jumbo roaster, now used in the Arbuckle plant, which roasts ten thousand pounds an hour.

Electric Coffee-Roasting

In 1903, George C. Lester, of New York, was granted a United States patent on an electric coffee roaster, that is, a machine to roast by electric heat. There were two cylinders, the inner being of wire gauze, and the outer of copper and asbestos. Between the two, four electric heaters were placed.

There was demonstrated in Germany, in 1906, an electric coffee roaster employing a number of resistance coils, consisting of strips of Krupp metal two and one-half mm. thick, five mm. broad, and thirteen and one-half mm. long, wound on porcelain tubes, which transmitted the heat to the

ONE OF THE FIRST ELECTRIC COFFEE MILLS

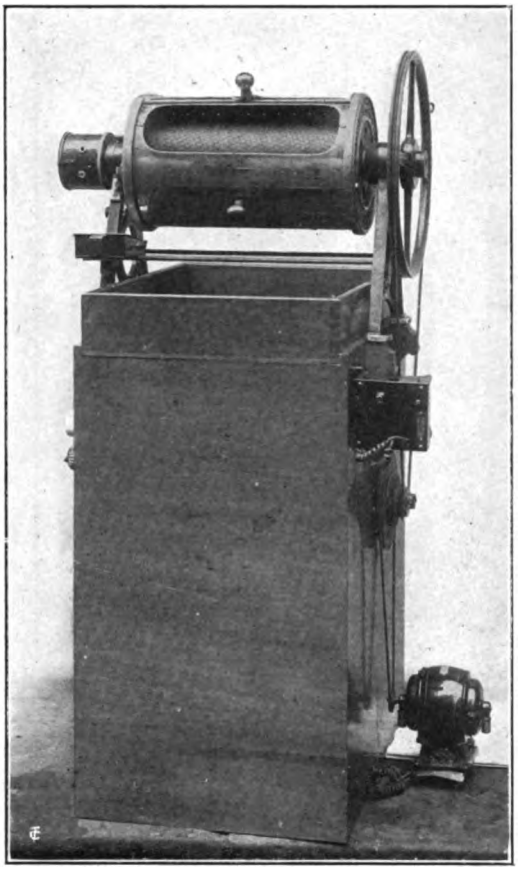
air within the roasting cylinder. Analysis showed that coffee electrically roasted contained more substances soluble in water than that roasted by coke, as well as considerably more material soluble in ether. This machine was invented by Captain Carl Moegling about 1900.

Another electric-fuel-machine patent was granted in the United States to Robert H. Talbutt, of Baltimore, in 1911. This machine had the electric heater in the center of the roasting cylinder. An electrically heated machine called the Ben Franklin was demonstrated in New York in 1918.

In 1919, Everett T. Shortt, Dallas, Tex., was granted a United States patent on an electrical roaster.

Up to the present writing, no great progress has been made in the United States with the roasting of coffee by electric heat.

The Phoenix Electrical Heating Co. manufactured, and the Uno Company, Ltd., of London, marketed an electrically heated roaster as far back as 1909. The machine was not altogether satisfactory, even to the makers; and the Uno Company is now (1922) experimenting with a new type of electric roaster which it expects will remedy the defects of the early machine. The 1909 roaster was made of two concentric cylinders revolving around a set of fixed heating elements, consisting of a series of spiral



ENGLISH ELECTRIC-FUEL ROASTER

wires held in position on fireproof clay insulators, these wires being assembled, insulated, and brought out through the fixed center to a terminal, or a set of terminals, at one end. In this way, no contact brushes or rings were needed. The machine had a sampling device at one end which threw out a few berries each time it was operated. It was not possible to return these sample berries. Such an arrangement appeared necessary, however, unless one was prepared to have the heating element on the outside of the machine and to pick up the current by means of rings or brushes. When the operator became accustomed to the coffee he was roasting, this was not a matter of great moment, because in England, at least, the average coffee roaster does not require a testing sample until he is about ready to turn out and to cool the roast.

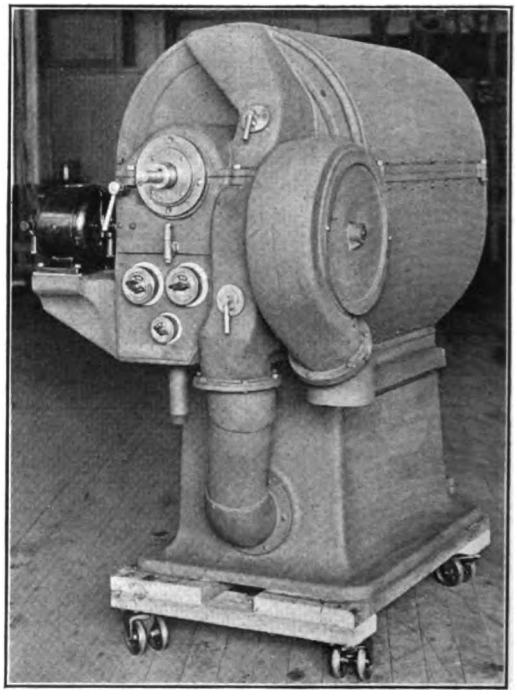
The Uno machine had a capacity of seven pounds, and the time occupied in roasting was from eight to ten minutes, depending on whether the roaster had been freshly switched on or had been running for a few minutes. The wattage was 5,520. The consumption per hundredweight was under thirteen units. The makers gave, as the most economical pressure on which to work, 220 to 240 volts. The machine was operated for eighteen months in the show window of a London retail grocer.

In 1921, a United States patent was granted to Mark T. Seymour, Stowe, N. Y., on an electric coffee and peanut roaster, which has the heating element embedded in a cement-lined cylinder that contains a roasting cage.

In 1921, Fred J. Kuhlemeir and Ralph J. Quelle, of Burlington, Ia., were granted a United States patent on a small household coffee roaster electrically equipped, and roasting by electric heat.

Other Machinery Patents

In 1903, Luigi Giacomini, of Florence, Italy, was granted a United States patent on a process for roasting coffee.



BEN FRANKLIN ELECTRIC COFFEE ROASTER

In 1905, A. A. Warner, assignor to Landers, Frary & Clark, New Britain, Conn., was granted two United States patents on a coffee mill.

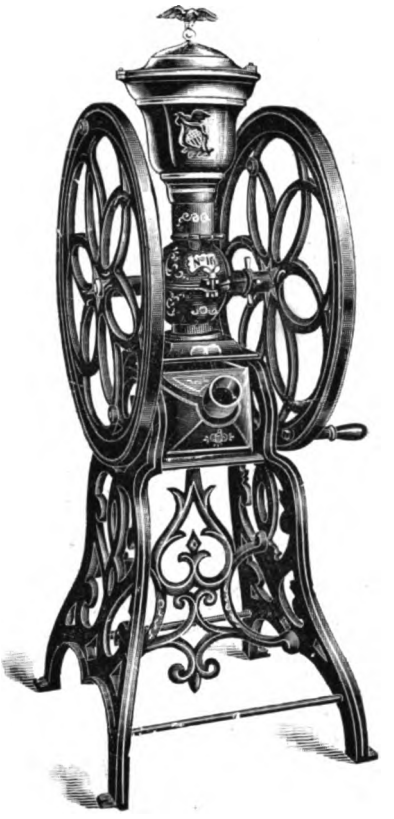
In 1906, Ludwig Schmidt, assignor to the Essmueller Mill Furnishing Co., St. Louis, was granted a United States patent on a coffee roaster. This company and the Reuter-Jones Manufacturing Co., also of St. Louis, were making machines similar to the original Burns model. The Reuter-Jones Manufacturing Co., in 1910, brought out a self-contained gas roaster called the St. Louis, Jr. In 1913, at a receiver's sale, A. P. Grohens, of the Lambert Machine Co., acquired all the machinery and patent rights of the Reuter-Jones Manufacturing Company.

In 1904, J. W. Chapman and G. W. Kooman, assignors to Manning, Bowman & Co., Meriden, Conn., were granted a United States patent on a coffee or tea pot. The same year, George E. Savage and G. W. Hope were granted two United States patents on coffee or tea pots, also assigned to Manning, Bowman & Co.

In 1904, Sigmund Sternau, J. P. Steppe, and L. Strassberger, assignors to S. Sternau & Co., New York, were granted a United States patent on a percolator. Six others were granted to Charles Nelson, and assigned to S. Sternau & Co., in 1912 and 1913, for a percolator, the manufacture and sale of which were discontinued in 1915.

In 1905, a celebrated case was decided in Kansas City involving litigation between William E. Baker, of Baker & Co., Minneapolis, and the F. A. Duncombe Manufacturing Co., of St. Joseph, Mo., over Mr. Baker's patent rights in a machine to produce steel-cut coffee. The suit was brought in 1903, and Mr. Baker contended that his patent gave him the exclusive right to the "uniformity of granules by means of the sharply dressed mechanism" and by the use of a fan for blowing away the silver skins, produced by his machine; while the defendant said he obtained the same result (steel-cut coffee) by grading the granules through screens or sieves. The defense was that Mr. Baker's process was not a discovery; because, grinding coffee was as old as the world's knowledge, and winnowing the chaff was equally ancient. The lower court dismissed the bill, because the "patents sued upon are devoid of patentable invention"; and the United States Court of Appeals confirmed the decision.

In 1905, Frederick A. Cauchois, of New York, brought out his Private Estate coffee maker, a clever combination of the French drip and filter processes, employing a thin layer of Japanese paper as a filtering agent. The same year, Finley Acker, of Philadelphia, was granted a United States patent on a percolator employing two cylinders, perforated on the sides, with a sheet of percolator paper placed between them to act as a filtering medium.



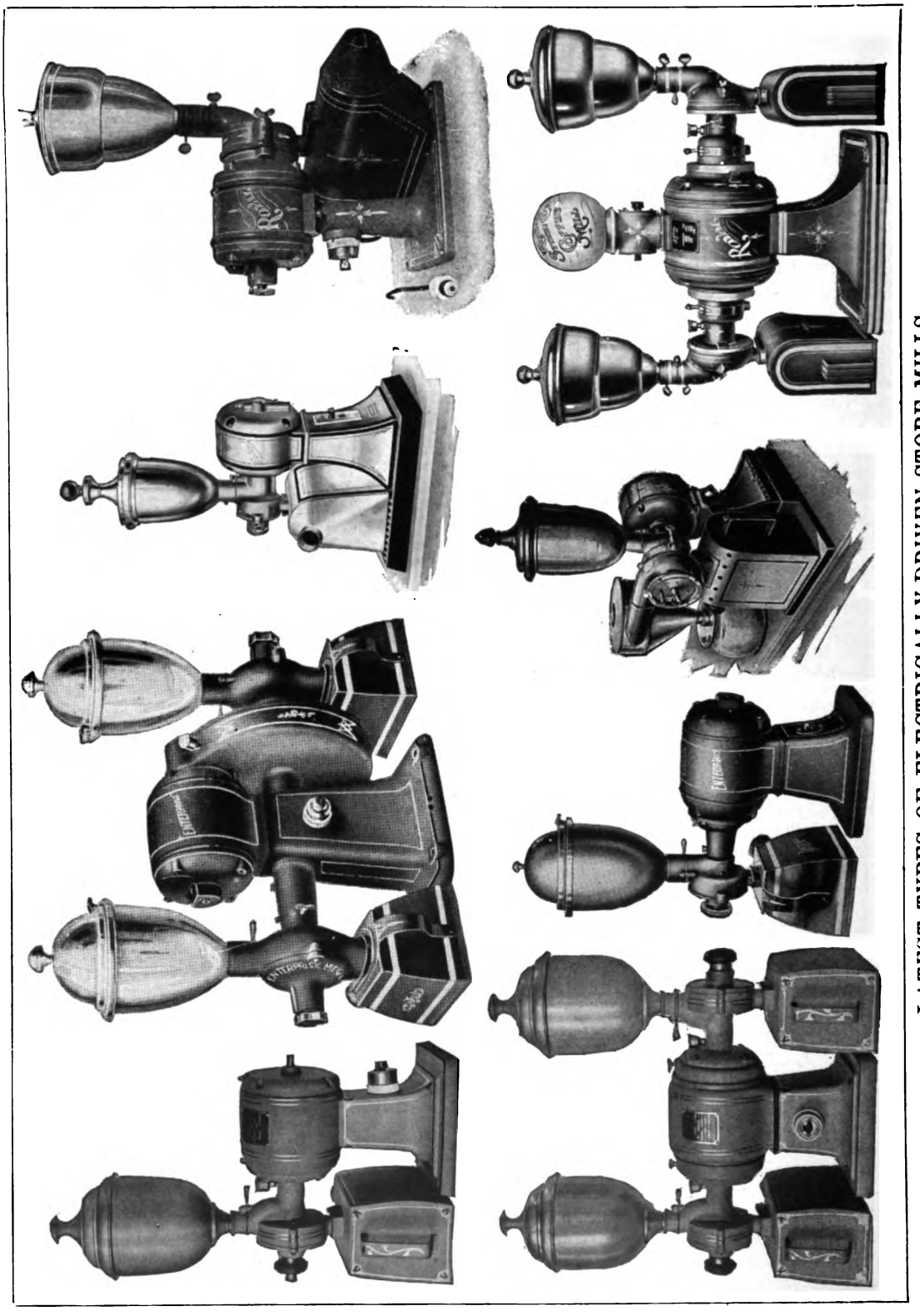
ENTERPRISE HAND STORE MILL

In 1906, George Savage and J. W. Chapman, assignors to Manning, Bowman & Co. of Meriden, Conn., were granted a United States patent on a coffee percolator.

In 1906, Alonzo A. Warner, assignor to Landers, Frary & Clark, New Britain, Conn., was granted a United States patent on a coffee percolator.

In 1906, H. D. Kelly, Kansas City, was granted a United States patent on the Kellum Automatic coffee urn, employing a coffee extractor in which ground coffee is continually agitated before percolation by a vacuum process. Sixteen patents followed.

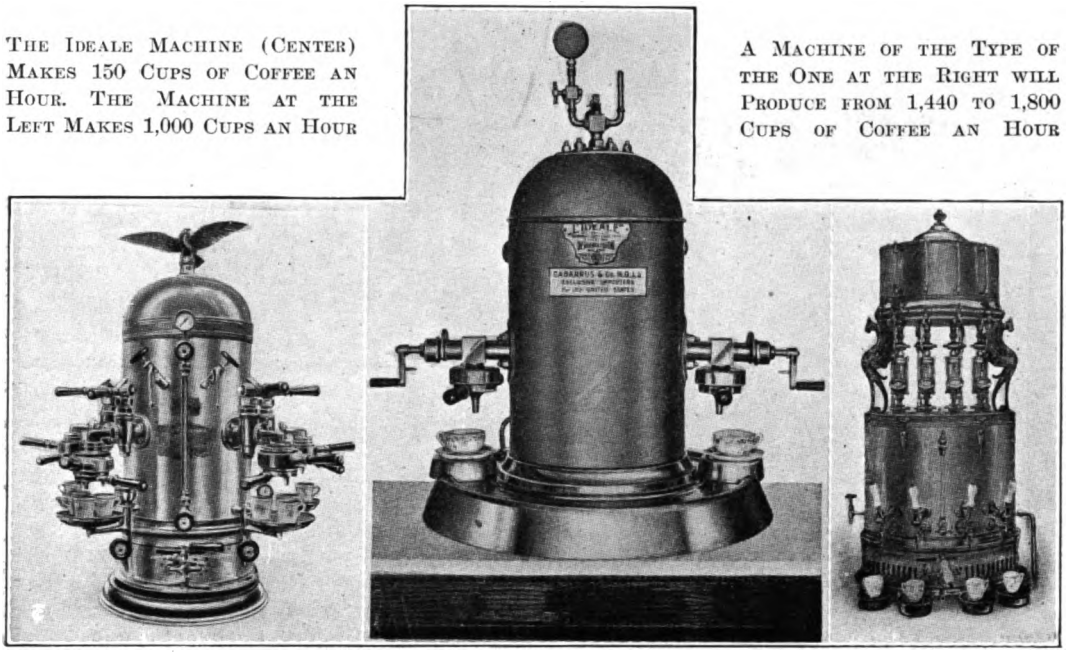
In 1907, Desiderio Pavoni, of Milan, Italy, was granted a patent in Italy for an improvement on the Bezzara system for preparing and serving coffee as a rapid infusion of a single cup, first introduced in



LATEST TYPES OF ELECTRICALLY DRIVEN STORE MILLS

THE IDEALE MACHINE (CENTER) MAKES 150 CUPS OF COFFEE AN HOUR. THE MACHINE AT THE LEFT MAKES 1,000 CUPS AN HOUR

A MACHINE OF THE TYPE OF THE ONE AT THE RIGHT WILL PRODUCE FROM 1,440 TO 1,800 CUPS OF COFFEE AN HOUR



TYPES OF ITALIAN RAPID COFFEE-MAKING MACHINES

1903 - 1904. It is known as the Ideale urn, and makes 150 cups per hour. Among other Italian rapid coffee-making machines which, with this one, have attained considerable prominence in Europe and South America, mention should be made of La Victoria Arduino made by Pier Teresio Arduino, of Turin, Italy, introduced in 1909, that makes 1000 cups per hour. It was patented in the United States in 1920. There are, also, L'Italiana Sovereign Filter Machine (1440 cups per hour) made by Bossi, Vernetti & Bartolini, Turin, (subsequently merged with La Victoria Arduino - Societa Anonima); and José Baro's Express, Buenos Aires, making 600 cups an hour.

In 1908, A. E. White, Chicago, was granted a United States patent on a coffee urn. He assigned it to the James Heekin Co., of Cincinnati.

In 1908, I. D. Richheimer, Chicago, introduced his Tricolator to the trade and the consumer. This is an aluminum device to fit any coffee pot, combining French drip and filtration ideas, with Japanese paper as the filtration medium.

In 1908, an improved type of Burns roaster was patented in the United States. The improvement consisted of an open perforated cylinder with flexible back-head and balanced front bearing. The following year, the Burns tilting sample-roaster for gas or electric heating units was patented.

In 1909, Frederick A. Cauchois, of New York, was granted a United States patent on a coffee urn fitted with a centrifugal pump for repouring.

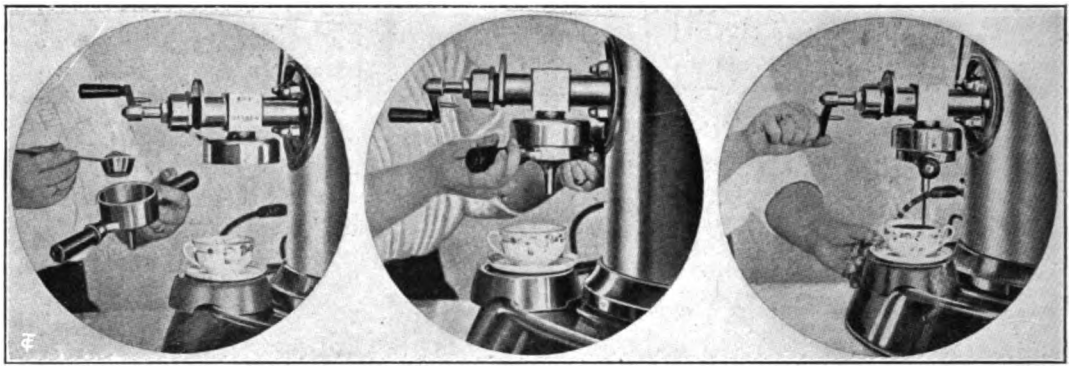
In 1909, C. F. Blanke, of St. Louis, was granted two United States patents on a china coffee pot with a cloth filter, the sides tightly, and the bottom loosely, woven.

In 1911, Edward Aborn, of New York, was granted a United States patent on his Make-Right coffee-filter device. This was later incorporated with improvements in a Tru-Bru coffee pot, on which he was granted another patent in 1920.

In 1912, John E. King, of Detroit, was granted a United States patent on an improved coffee percolator for restaurants, employing a sheet of filter paper on a ring in a metal basket; the ring to be removed once the filter paper was in position on the perforated bottom plate of the percolator basket.

In 1913, F. F. Wear, Los Angeles, perfected a coffee-making device in which a metal perforated clamp was employed to apply a filter paper to the under-side of an English earthenware adaptation of the French drip pot.

In 1912, William Lawton demonstrated in London a gas coffee roaster of his own

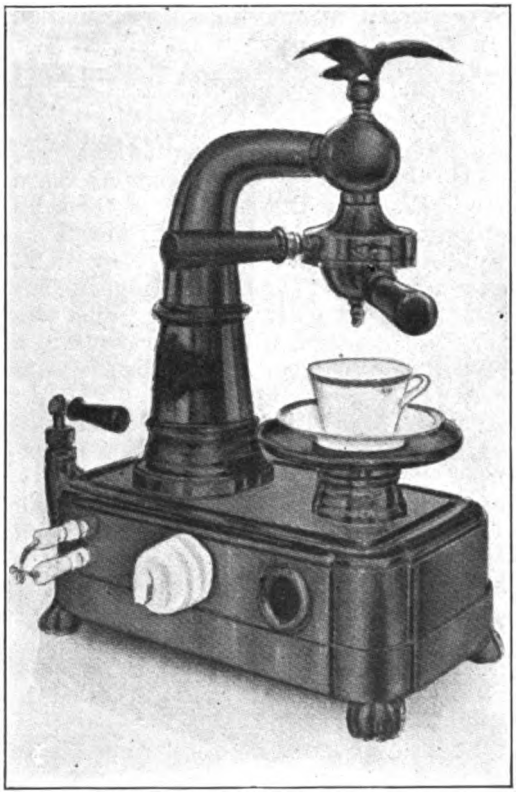


SHOWING HOW THE ITALIAN RAPID COFFEE MACHINE WORKS
Left, putting coffee in the filter — Center, applying filter to faucet — Right, turning on water and steam to make the drink

invention, by means of which he roasted coffee "in suspension" to a light brown color in three minutes.

Herbert L. Johnston, assignor to the Hobart Electric Manufacturing Co., Troy, Ohio, was granted a United States patent on a machine for refining coffee in 1913.

In 1914, the Phylax coffee maker, embodying an improvement on the French drip principle, was introduced to the trade. The process was demonstrated by Benjamin H. Calkin, of Detroit, in 1921, as "an art of brewing coffee."



LA VICTORIA ARDUINO MIGNONNE
An electric rapid coffee maker

In 1914, Robert Burns, assignor to Jabez Burns & Sons, New York, was granted a United States patent on a coffee-granulating mill.

In 1914-15, Herbert Galt, of Chicago, was granted three United States patents on the Galt coffee pot, made of aluminum, and having two parts, a removable cylinder employing the French drip principle, and the containing pot.

In 1915, the Burns Jubilee (inner-heated) gas coffee roaster was patented in the United States and put on the market.

In 1915, the National Coffee Roasters Association Home coffee mill, employing an improved set screw operating on a cog-and ratchet principle, was introduced to the trade.

In 1916, a United States patent was granted to I. D. Richheimer, Chicago, for an infuser improvement on his Tricolator.

In 1916, Saul Blickman, assignor to S. Blickman, New York, was granted a United States patent on an apparatus for making and dispensing coffee.

In 1916, Orville W. Chamberlain, New Orleans, was granted a United States patent on an automatic drip coffee pot.

In 1916, Jules Le Page, Darlington, Ind., obtained two United States patents on cutting rolls to cut — and not to grind or crush — corn, wheat, or coffee. These were subsequently incorporated in the Ideal steel-cut coffee mill and marketed to the trade by the B. F. Gump Co., Chicago.

In 1917, Richard A. Greene and William G. Burns, assignors to Jabez Burns &

Sons, New York, were granted patents in the United States on the Burns flexible-arm cooler (for roasted batches) providing full fan-suction to a cooler box at all points in its track travel.

In 1919, Joseph F. Smart, assignor to Landers, Frary & Clark, New Britain, Conn., was granted a United States patent on a percolator.

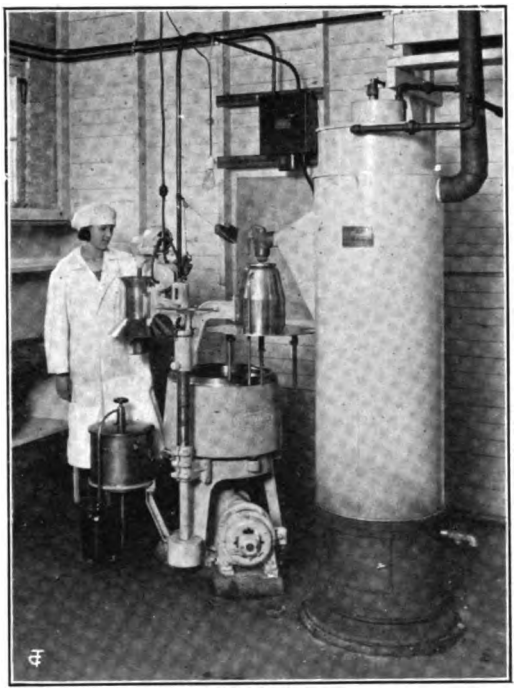
In 1919, Charles Morgan, assignor to the Arcade Manufacturing Co., Freeport, Ill., was granted a United States patent on an improved grinding mill.

In 1919, Edward F. Schnuck, assignor to Jabez Burns & Sons, New York, was granted a United States patent on an improvement for a gas coffee roaster. In 1920, he was granted a United States patent on an improved process of twice cutting coffee and removing the chaff after each cutting.

In 1920, Natale de Mattei, of Turin, Italy, was granted a United States patent on a rapid coffee-filtering machine.

In 1920, Frederick H. Muller, of Chicago, was granted a United States patent on "an art of making coffee," and on an improved apparatus for hotels and restaurants, which comprised a series of superposed metal containers, or cartridges, of ground coffee placed in a perforated bucket designed to rest in a coffee urn, the cartridges being lifted out as the boiling water poured on them sinks with the drawing off of the "decoction" at the faucet.

THE N. C. R. A. HOME COFFEE MILL



THE MANTHEY-ZORN RAPID COFFEE INFUSER AND DISPENSER

In 1920, Alfredo M. Salazar, of New York, was granted a United States patent on a coffee urn in which the coffee is made at the time of serving by using steam pressure to force the boiling water through ground coffee held in a cloth sack attached to the faucet.

In 1920, William H. Bruning, Evansville, Ind., was granted a United States patent on an improved French drip pot made of aluminum and provided with a vacuum jacket in the dripper section, and a hot-water jacket in the serving portion, to keep the beverage hot.

In 1921, the Manthey-Zorn Laboratories Co., of Cleveland, brought out a rapid coffee-infuser and dispenser employing in the infuser a centrifugal to make an extract in thirty-eight seconds, and designed to deliver a gallon of concentrated liquid, or coffee base, every three minutes. The dispenser automatically combines the coffee base with boiling water in a differential faucet in the proportion desired, usually

THE TRICOLETTE, A PAPER-FILTER DEVICE FOR A SINGLE CUP
Above; in position on cup — Below; opened, showing parts

one of base to four of water. The dispenser serves 600 cups per hour. An additional faucet may be added which will double the capacity.

Among foreign coffee makers applying the French drip principle, the Vienna coffee-making machine, known in the United States as the Bohemian coffee pot, has met with much favor in this country. Elsewhere it is known as the Carlsbad. It is made of china, and the European manufacturer has a patent on the porcelain strainer, or grid, which is provided with slits that are very fine on the inner side but that widen on the outer side to permit careful straining and to facilitate cleaning.

Some of the latest developments in coffee apparatus were shown at the industrial exposition at the National Coffee Roasters Association, held in New York, November 1-3, 1921. Among items of distinction not heretofore included in this work, mention should be made of: an American-French coffee biggin, being a French drip pot made of American porcelain and fitted with a muslin strainer; a glass urn-liner, intended to supplant the porcelain liner; and an electric repouring pump, designed to be attached to any type of coffee urn.

Careful research of the records of the United States patent office discloses that the number of patents relating to coffee apparatus and coffee preparations, issued from 1789 to 1921, is as follows:

UNITED STATES COFFEE PATENTS

Devices	*Patents*
Coffee Mills	185
Coffee-roasting devices, and improvements thereon	312
Coffee-making devices	835
Coffee-cleaning, hulling, drying, polishing, and plantation machinery in general	175
Miscellaneous patents (for coating, glazing, treated coffees, substitutes, etc.)	300
Total	1,807

It must be borne in mind that there was a number of patents granted on machines that were intended for, and used for, coffee, but that did not mention coffee in the specifications. Many coffee driers were listed as "grain driers," for instance. Also, many excellent devices have been made that were never patented.

Chapter XXXV

WORLD'S COFFEE MANNERS AND CUSTOMS

How coffee is roasted, prepared, and served in all the leading civilized countries — The Arabian coffee ceremony — The present-day coffee houses of Turkey — Twentieth-century improvements in Europe and the United States

COFFEE manners and customs have shown little change in the Orient in the six hundred-odd years since the coffee drink was discovered by Sheik Omar in Arabia. As a beverage for western peoples, however, and more particularly in America, there have been many improvements in making and serving it.

A brief survey of the coffee conventions and coffee service in the principal countries where coffee has become a fixed item in the dietary is presented here, with a view to show how different peoples have adapted the universal drink to their national needs and preferences.

To proceed in alphabetical order, and beginning with Africa, coffee drinking is indulged in largely in Abyssinia, Algeria, Egypt, Portuguese East Africa, and the Union of South Africa.

Coffee Manners and Customs in Africa

In Abyssinia and Somaliland, among the native population, the most primitive methods of coffee making still obtain. Here the wandering Galla still mix their pulverized coffee beans with fats as a food ration, and others of the native tribes favor the *kisher*, or beverage made from the toasted coffee hulls. An hour's boiling produces a straw-colored decoction, of a slightly sweetish taste. Where the Arabian customs have taken root, the drink is prepared from the roasted beans after the Arabian and Turkish method. The white inhabitants usually prepare and serve the beverage as in the homeland; so that it is possible to obtain it after the English, French, German, Greek, or Italian styles. Adaptations of the French sidewalk café, and of the Turkish coffee house, may be seen in the larger towns.

In the equatorial provinces of Egypt, and in Uganda, the natives eat the raw berries; or first cook them in boiling water, dry them in the sun, and then eat them. It is a custom to exchange coffee beans in friendly greeting.

Individual earthen vessels for making coffee, painted red and yellow, are made by some of the native tribes in Abyssinia, and usually accompany disciples of Islam when they journey to Mecca, where the vessels find a ready sale among the pilgrims, most of whom are coffee-devotees.

Turkish and Arabian coffee customs prevail in Algeria and Egypt, modified to some extent by European contact. The Moorish cafés of Cairo, Tunis, and Algiers have furnished inspiration and copy for writers, artists, and travelers for several centuries. They change little with the years. The *mazagran* — sweetened cold coffee to which water or ice has been added — originated in Algeria. It probably took its name from the fortress of the same name reserved to France by the treaty of the Tafna in 1837. It is said that the French colonial troops were first served with a drink made from coffee syrup and cold water on marches near Mazagran, formerly spelled Masagran. Upon their return to the French capital, they introduced the idea, with the added fillip of service in tall glasses, in their favorite cafés, where it became known as *café mazagran*. Variants are coffee syrup

MOORISH COFFEE HOUSE IN ALGIERS

with seltzer, and with hot water. "This fashion of serving coffee in glasses", says Jardin, "has no *raison d'être*, and nothing can justify abandoning the cup for coffee."

In the principal streets and public squares of any town in Algeria it is a common sight to find a group of Arabs squatting about a portable stove, and a table on which cups are in readiness to receive the boiling coffee. The thirsty Arab approaches the dealer, and for a modest sum he gets his drink and goes his way; unless he prefers to go inside the café, where he may get several drinks and linger over them, sitting on a mat with his legs crossed and smoking his *chibouque*. Indeed, this is a typical scene throughout the Near East, where sheds or coffee tents — sketches of the more pretentious coffee houses — coffee shops, and itinerant coffee-venders are to be met at almost every turn.

In an unpublished work, Baron Antoine Rousseau and Th. Roland de Bussy have the following description of a typical Moorish café at Algiers:

We entered without ceremony into a narrow deep cave, decorated with the name of the café. On the right and on the left, along its length, were two benches covered with mats; notched cups, tongs, a box of brown sugar, all placed near a small stove, completed the furniture of the place. In the evening, the dim light from a lamp hanging from the ceiling shows the indistinct figures of a double row of natives listening to the nasal cadences of a band who play a pizzicato accompaniment on small three-stringed violins.

Here, as in Europe, the cafés are the providential rendezvous for idlers and gossips, exchanges for real-estate brokers and players at cards.

Europeans recently arrived frequent them particularly. Some go only to satisfy their curiosity; others out of an inborn scorn for the customs of civilization. They go to sleep as Frenchmen, they awake Mohammedans! Their love for "Turkish art" only leads them to haunt the native shops and to affect oriental poses.

If we quit for a moment the interior of the city to follow between two hedgerows of mastics or aloes, one of those capricious paths which lead one, now up to the summit of a hill, now to the depths of some ravine, very soon the tones of a rustic flute, the modulations of the *Djouak*, will betray some cool and peaceful retreat, some rustic café, easily recognized by its facade, pierced with large openings. To my eyes, nothing equals the charm of these little buildings scattered here and there along the edges of a stream, sheltered under the thick foliage, and constantly enlivened by the coming and going of the husbandmen of the neighborhood.

Certain old Moors from the neighboring districts, fleeing the noises of the city, are the faithful habitués of these agreeable retreats. Here they instal themselves at dawn, and know how to enjoy every moment of their day with tales of their travels and youthful adventures, and many a legend for which their imagination takes all the responsibility.

Gérôme's painting of the "Coffee House at Cairo," which hangs in the Metropolitan Museum of Art, New York, gives one a good idea of the atmosphere of the Egyptian café. The preparation and service is modified Turkish-Arabian. The coffee is ground to a powder, boiled in an *ibrik* with the addition of sugar, and served frothing in small cups. Story-tellers, singers, and dancers furnish amusement as of yore.

COFFEE HOUSE IN CAIRO

HULLING COFFEE IN ADEN, ARABIA

COFFEE SERVICE AT A BARBER SHOP IN CAIRO

The Oriental customs have not changed much in this respect. Trolley cars, victorias, and taxis may have replaced the donkeys in the new sections of the larger Egyptian cities; but in old Alexandria and Cairo, the approach to the native coffee house is as dirty and as odorous as ever. Coffee is always served in all business transactions. Nowadays, the Egyptian women chew gum and the men smoke cigarettes, French department stores offer bargain sales, and the hotels advertise tea dances; but the Egyptian coffee drink is still the tiny cup of coffee grounds and sugar that it was three hundred years ago, when sugar was first used to sweeten coffee in Cairo.

In Portuguese East Africa, the natives prepare and drink coffee after the approved African native fashion, but the white population follows European customs. In the Union of South Africa, Dutch and English customs prevail in making and serving the beverage.

Manners and Customs in Asia

"Arabia the Happy" deserves to be called "the Blest", if only for its gift of coffee to the world. Here it was that the virtues of the drink were first made known; here the plant first received intensive cultivation. After centuries of habitual use of the beverage, we find the Arabs, now as then, one of the strongest and noblest races of the world, mentally superior to most of them, generally healthy, and growing old so gracefully that the faculties of the mind seldom give way sooner than those of the body. They are an ever living earnest of the healthfulness of coffee.

The Arabs are proverbially hospitable; and the symbol of their hospitality for a thousand years has been the great drink of democracy — coffee. Their very houses are built around the cup of human brotherhood. William Wallace,[1] writing on Arabian philosophy, manners, and customs, says:

> The principal feature of an Arab house is the *kahwah* or coffee room. It is a large apartment spread with mats, and sometimes furnished with carpets and a few cushions. At one end is a small furnace or fireplace for preparing coffee. In this room the men congregate; here guests are received, and even lodged; women rarely enter it, except at times when strangers are unlikely to be present. Some of these apartments are very spacious and supported by pillars; one wall is usually built transversely to the compass direction of the *Ka'ba* (sacred shrine of Mecca). It serves to facilitate the performance of prayer by those who may happen to be in the *kahwah* at the appointed times.

Several rounds of coffee, without milk or sugar, but sometimes flavored with cardamom seeds, are served to the guest at first welcome; and coffee may be had at all hours

[1] *Encyclopedia Britannica*, 11th Ed. (vol. 11: p. 285).

SHIPS OF THE DESERT LADEN WITH COFFEE. ARABIA

between meals, or whenever the occasion demands it. Always the beans are freshly roasted, pounded, and boiled. The Arabs average twenty-five to thirty cups (findjans) a day. Everywhere in Arabia there are to be found cafés where the beverage may be bought.

Those of the lower classes are thronged throughout the day. In front, there is generally a porch or bench where one may sit. The rooms, benches, and little chairs lack the cleanliness and elegance of the one-time luxurious "*caffinets*" of cities like Damascus and Constantinople, but the drink is the same. There is not in all Yemen a single market town or hamlet where one does not find upon some simple hut the legend, "Shed for drinking coffee".

The Arab drinks water before taking coffee, but never after it. "Once in Syria", says a traveler, "I was recognized as a foreigner because I asked for water just after I had taken my coffee. 'If you belonged here', said the waiter, 'you would not spoil the taste of coffee in your mouth by washing it away with water.'"

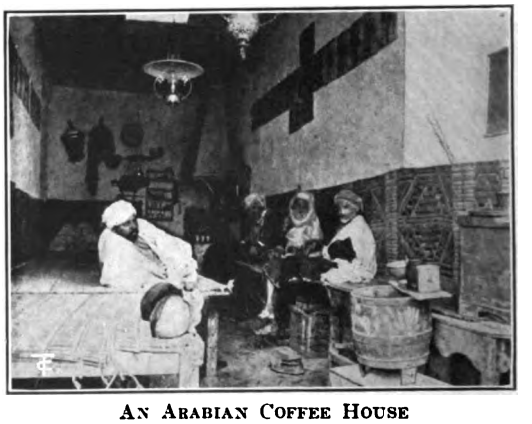
It is an adventure to partake of coffee prepared in the open, at a roadside inn, or khan, in Arabia by an *araba*, or diligence driver. He takes from his saddle-bag the ever-present coffee kit, containing his supply of green beans, of which he roasts just sufficient on a little perforated iron plate over an open fire, deftly taking off the beans, one at a time, as they turn the right color. Then he pounds them in a mortar, boils his water in the long, straight-handled open boiler, or *ibrik* (a sort of brass mug or *jezveh*), tosses in the coffee powder, moving the vessel back and forth from the fire as it boils up to the rim; and, after repeating this maneuver three times, pours the contents foaming merrily into the little egg-like serving cups.

Café sultan, or *kisher*, the original decoction, made from dried and toasted coffee hulls, is still being drunk in parts of Arabia and Turkey.

Coffee in Arabia is part of the ritual of business, as in other Oriental countries. Shop-keepers serve it to the customer before the argument starts. Recently, a New York barber got some valuable publicity because he regaled his customers with tea and music. It was "old stuff". The Arabian and Turkish barber shops have been serving coffee, tobacco, and sweetmeats to their customers for centuries.

For a faithful description of the ancient coffee ceremony of the Arabs, which, with slight modification, is still observed in Arabian homes, we turn to Palgrave. First he describes the dwelling and then the ceremony:

> The K'hāwah was a large oblong hall, about twenty feet in height, fifty in length, and sixteen, or thereabouts, in breadth; the walls were coloured in a rudely decorative manner with brown and white wash, and sunk here and there into small triangular recesses, destined to the reception of books, though of these Ghafil at least had no over-abundance, lamps, and other such like objects. The roof of timber, and flat; the floor was strewed with fine clean sand, and garnished all round alongside of the walls with long strips of carpet, upon which cushions, covered with faded silk, were disposed at suitable intervals. In poorer houses felt rugs usually take the place of carpets.
>
> In one corner, namely, that furthest removed from the door, stood a small fireplace, or, to speak more exactly, furnace, formed of a large square block of granite, or some other hard stone, about twenty inches each way; this is hollowed inwardly into a deep funnel, open above, and communicating below with a small horizontal tube or pipe-hole, through which the air passes, bellows-driven, to the lighted charcoal piled up on a grating about half-way inside the cone. In this manner the fuel is soon brought



AN ARABIAN COFFEE HOUSE

BREWING THE GUEST'S COFFEE IN A MOHAMMEDAN HOME

to a white heat, and the water in the coffee-pot placed upon the funnel's mouth is readily brought to boil. The system of coffee furnaces is universal in Djowf and Djebel Shomer, but in Nejed itself, and indeed in whatever other yet more distant regions of Arabia I visited to the south and east, the furnace is replaced by an open fireplace hollowed in the ground floor, with a raised stone border, and dog-irons for the fuel, and so forth, like what may be yet seen in Spain. This diversity of arrangement, so far as Arabia is concerned, is due to the greater abundance of fire-wood in the south, whereby the inhabitants are enabled to light up on a larger scale; whereas throughout the Djowf and Djebel Shomer wood is very scarce, and the only fuel at hand is bad charcoal, often brought from a considerable distance, and carefully husbanded.

This corner of the K'hāwah is also the place of distinction whence honour and coffee radiate by progressive degrees round the apartment, and hereabouts accordingly sits the master of the house himself, or the guests whom he more especially delighteth to honour.

On the broad edge of the furnace or fireplace, as the case may be, stands an ostentatious range of copper coffee-pots, varying in size and form. Here in the Djowf their make resembles that in vogue at Damascus; but in Nejed and the eastern districts they are of a different and much more ornamental fashioning, very tall and slender, with several ornamental circles and mouldings in elegant relief, besides boasting long beak-shaped spouts and high steeples for covers. The number of these utensils is often extravagantly great. I have seen a dozen at a time in a row by one fireside, though coffee-making requires, in fact, only three at most. Here in the Djowf five or six are considered to be the thing; for the south this number must be doubled; all this to indicate the riches and munificence of their owner, by implying the frequency of his guests and the large amount of coffee that he is in consequence obliged to have made for them.

Behind this stove sits, at least in wealthy houses, a black slave, whose name is generally a diminutive in token of familiarity or affection; in the present case it was Soweylim, the diminutive of Sālim. His occupation is to make and pour out the coffee; where there is no slave in the family, the master of the premises himself, or perhaps one of his sons, performs that hospitable duty; rather a tedious one, as we shall soon see.

We enter. On passing the threshold it is proper to say, "*Bismillah*," *i. e.*, "in the name of God;" not to do so would be looked on as a bad augury alike for him who enters and for those within. The visitor next advances in silence, till on coming about half-way across the room, he gives to all present, but looking specially at the master of the house, the customary "*Es-salamu'aleykum*," or "Peace be with you," literally, "on you." All this while every one else in the room has kept his place, motionless, and without saying a word. But on receiving the salaam of etiquette, the master of the house rises, and if a strict Wahhābee, or at any rate desirous of seeming such, replies with the full-length traditionary formula, "*W' 'aleykumu-s-salāmu, w'rahmat' Ullahi w'barakátuh*," which is, as every one knows, "And with (or, on) you be peace, and the mercy of God, and his blessings." But should he happen to be of anti-Wahhābee tendencies the odds are that he will say "*Marhabá*," or "*Ahlan w' sahlan*," *i. e.*,

"welcome" or "worthy, and pleasurable," or the like; for of such phrases there is an infinite, but elegant variety.

All present follow the example thus given, by rising and saluting. The guest then goes up to the master of the house, who has also made a step or two forwards, and places his open hand in the palm of his host's, but without grasping or shaking, which would hardly pass for decorous, and at the same time each repeats once more his greeting, followed by the set phrases of polite enquiry, "How are you?" "How goes the world with you?" and so forth, all in a tone of great interest, and to be gone over three or four times, till one or other has the discretion to say "*El hamdu l'illāh*," "Praise be to God", or, in equivalent value, "all right," and this is a signal for a seasonable diversion to the ceremonious interrogatory.

The guest then, after a little contest of courtesy, takes his seat in the honoured post by the fireplace, after an apologetical salutation to the black slave on the one side, and to his nearest neighbour on the other. The best cushions and newest looking carpets have been of course prepared for his honoured weight. Shoes or sandals, for in truth the latter alone are used in Arabia, are slipped off on the sand just before reaching the carpet, and there they remain on the floor close by. But the riding stick or wand, the inseparable companion of every true Arab, whether Bedouin or townsman, rich or poor, gentle or simple, is to be retained in the hand, and will serve for playing with during the pauses of conversation, like the fan of our great-grandmothers in their days of conquest.

Without delay Soweylim begins his preparations for coffee. These open by about five minutes of blowing with the bellows and arranging the charcoal till a sufficient heat has been produced. Next he places the largest of the coffee-pots, a huge machine, and about two-thirds full of clear water, close by the edge of the glowing coal-pit, that its contents may become gradually warm while other operations are in progress. He then takes a dirty knotted rag out of a niche in the wall close by, and having untied it, empties out of it three or four handfuls of unroasted coffee, the which he places on a little trencher of platted grass, and picks carefully out any blackened grains, or other non-homologous substances, commonly to be found intermixed with the berries when purchased in gross; then, after much cleansing and shaking, he pours the grain so cleansed into a large open iron ladle, and places it over the mouth of the funnel, at the same time blowing the bellows and stirring the grains gently round and round till they crackle, redden, and smoke a little, but carefully withdrawing them from the heat long before they turn black or charred, after the erroneous fashion of Turkey and Europe; after which he puts them to cool a moment on the grass platter.

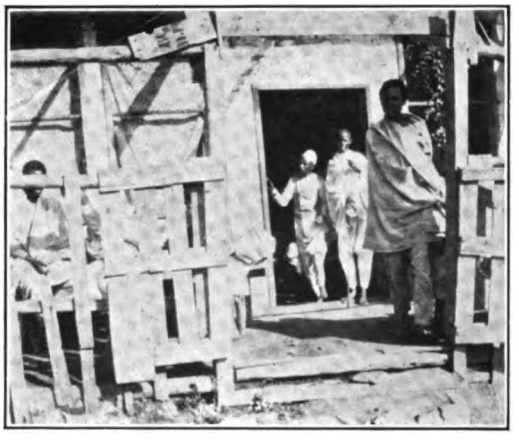
He then sets the warm water in the large coffee-pot over the fire aperture, that it may be ready boiling at the right moment, and draws in close between his own trouserless legs a large stone mortar, with a narrow pit in the middle, just enough to admit the large stone pestle of a foot long and an inch and a half thick, which he now takes in hand. Next, pouring the half-roasted berries into the mortar, he proceeds to pound them, striking right into the narrow hollow with wonderful dexterity, nor ever missing his blow till the beans are smashed, but not reduced into powder. He then scoops them out, now reduced to a sort of coarse reddish grit, very unlike the fine charcoal dust which passes in some countries for coffee, and out of which every particle of real aroma has long since been burnt or ground.

After all these operations, each performed with as intense a seriousness and deliberate nicety as if the welfare of the entire Djowf depended on it, he takes a smaller coffee-pot in hand, fills it more than half with hot water from the larger vessel, and then shaking the pounded coffee into it, sets it on the fire to boil, occasionally stirring it with a small stick as the water rises to check the ebullition and prevent overflowing. Nor is the boiling stage to be long or vehement: on the contrary, it is and should be as light as possible. In the interim he takes out of another rag-knot a few aromatic seeds called heyl, an Indian product, but of whose scientific name I regret to be wholly ignorant, or a little saffron, and after slightly pounding these ingredients, throws them into the simmering coffee to improve its flavour, for such an additional spicing is held indispensable in Arabia though often omitted elsewhere in the East. Sugar would be a totally unheard of profanation. Last of all, he strains off the liquor through some fibres of the inner palm-bark placed for that purpose in the jug-spout, and gets ready the tray of delicate parti-coloured grass, and the small coffee cups ready for pouring out. All these preliminaries have taken up a good half-hour.

Meantime we have become engaged in active conversation with our host and his friends. But our Sherarat guide, Suleyman, like a true Bedouin, feels too awkward when among townsfolk to venture on the upper places, though repeatedly invited, and accordingly has squatted down on the sand near the entrance. Many of Ghāfil's relations are present; their silver-decorated swords proclaim the importance of the family. Others, too, have come to receive us, for our arrival, announced before-hand by those we had met at the entrance pass, is a sort of event in the town; the dress of some betokens poverty, others are better clad, but all have a very polite and decorous manner. Many a question is asked about our native land and town, that is to say, Syria and Damascus, conformably to the disguise already adopted, and which it was highly important to keep well up; then follow enquiries regarding our journey, our business, what we have brought with us, about our medicines, our goods and wares, etc., etc. From the very first it is easy for us to perceive that patients and purchasers are likely to abound. Very few travelling merchants, if any, visit the Djowf at this time of year, for one must be mad, or next door to it, to rush into the vast desert around during the heats of June and July; I for one have certainly no intention of doing it again. Hence we had small danger of competitors, and found the market almost at our absolute disposal.

But before a quarter of an hour has passed, and while blacky is still roasting or pounding his coffee, a tall thin lad, Ghāfil's eldest son, appears, charged with a large circular dish, grass-platted like the rest, and throws it with a graceful jerk on the sandy floor close before us. He then produces a large wooden bowl full of dates, bearing in the midst of the heap a cup full of melted butter; all this he places on the circular mat, and says, "*Semmoo*," literally, "pronounce the Name", of God, understood; this means "set to work at it." Hereon the master of the house quits his place by the fireside and seats himself on the sand opposite to us; we draw nearer to the dish, and four or five others, after some respectful coyness, join the circle. Every one then picks out a date or two from the juicy half-amalgamated mass, dips them into the butter, and thus goes on eating till he has had enough, when he rises and washes his hands.

By this time the coffee is ready, and Soweylim begins his round, the coffee-pot in one hand; the tray and cups on the other. The first pouring out he must in etiquette drink himself, by way of a practical assurance that there is no "death in the pot;" the guests are next served, beginning with those next the honourable fireside; the master of the house receives his cup last of all. To refuse would be a positive and unpardonable insult; but one has not much to swallow at a time, for the coffee-cups, or finjans, are about the size of a large egg-shell at most, and are never more than half-filled. This is considered essential to good breeding, and a brimmer would here imply exactly the reverse of what it does in Europe; why it should be so I hardly know, unless perhaps the rareness of cup-stands or "zarfs" (see Lane's "Modern Egyptians") in Arabia, though these implements are universal in Egypt and Syria, might render an over-full cup inconveniently hot for the fingers that must grasp it without medium. Be that as it may, "fill the cup for your enemy" is an adage common to all, Bedouins or townsmen, throughout the Peninsula. The beverage itself is singularly aromatic and refreshing, a real tonic, and very different from the black mud sucked by the Levantine, or the watery roast-bean preparations of France. When the slave



NATIVE CAFE, HARAR, ABYSSINIA

EARLY MANNER OF SERVING COFFEE, TEA AND CHOCOLATE

From a drawing in Dufour's *Traitéz Nouveaux et Curieux du Café, du The et du Chocolat*

or freeman, according to circumstances, presents you with a cup, he never fails to accompany it with a "*Semm'*," "say the name of God," nor must you take it without answering "*Bismillah.*"

When all have been thus served, a second round is poured out, but in inverse order, for the host this time drinks first, and the guests last. On special occasions, a first reception, for instance, the ruddy liquor is a third time handed round; nay, a fourth cup is sometimes added. But all these put together do not come up to one-fourth of what a European imbibes in a single draught at breakfast.

For a more recent pen picture of coffee manners and customs in Arabia, we turn to Charles M. Daughty's *Travels in Arabia Deserta*'[2]:

Hirfa ever demanded of her husband towards which part should "the house" be built. "Dress the face". Zeyd would answer, "to this part", showing her with his hands the south, for if his booth's face be all day turned to the hot sun there will come in fewer young loitering and parasitical fellows that would be his coffee-drinkers. Since the *sheukh*, or heads, alone receive their tribes' *surra*, it is not much that they should be to the arms [of his] coffee-hosts. I have seen Zeyd avoid [them] as he saw them approach, or even rise ungraciously upon such men's presenting themselves (the half of every booth, namely the men's side, is at all times open, and any enter there that will, in the free

[2] London; 1888 (vol. 1: pp. 222, 224).

desert), and they murmuring he tells them, *wellah*, his affairs do call him forth, adieu; he must away to the *mejlis;* go they and seek the coffee elsewhere. But were there any *sheykh* with them, a coffee lord, Zeyd could not honestly choose but abide and serve them with coffee; and if he be absent himself, yet any *sheykhly* man coming to a *sheykh's* tent, coffee must be made for him, except he gently protest "*billah*, he would not drink." Hirfa, a *sheykh's* daughter and his nigh kinswoman, was a faithful mate to Zeyd in all his sparing policy.

Our *menzil* now standing, the men step over to Zeyd's coffee-fire, if the *sheykh* be not gone forth to the *mejlis* to drink his mid-day cup there. A few gathered sticks are flung down beside the hearth; with flint and steel one stoops and strikes fire in tinder, he blows and cherishes those seeds of the cheerful flame in some dry camel-dung, sets the burning shred under dry straws, and powders over more dry camel-dung. As the fire kindles, the *sheykh* reaches for his *dellàl*, coffee pots, which are carried in the *fatya*, coffee-gear basket; this people of a nomad life bestow each thing of theirs in a proper *beyt;* it would otherwise be lost in their daily removings. One rises to go to fill up the pots at the water-skins, or a bowl of water is handed over the curtain from the woman's side; the pot at the fire, Hirfa reaches over her litle palm-ful of green coffee berries . . . These are roasted and brayed; as all is boiling he sets out his little cups, *fenjeyl* (for fenjeyn). When, with a pleasant gravity, he has unbuckled his *gutia* or cup-box, we see the nomad has not above three or four fenjeyns, wrapt in a rusty clout, with which he scours them busily, as if this should make his cups clean. The roasted beans are pounded amongst Arabs with a magnanimous rattle — and (as all their labor) rhythmical — in brass of the town, or an old wooden mortar, gaily studded with nails, the work of some nomad smith. The water bubbling in the small *dellal*, he casts in his fine coffee powder, *el-bunn*, and withdraws the pot to simmer a moment. From a knot in his kerchief he takes then a head of cloves, a piece of cinnamon or other spice, *bahar*, and braying these he casts their dust in after. Soon he pours out some hot drops to essay his coffee; if the taste be to his liking, making dexterously a nest of all the cups in his hand, with pleasant clattering, he is ready to pour out for all the company, and begins upon his right hand; and first, if such be present, to any considerable *sheykh* and principal persons. The *fenjeyn kahwah* is but four sips; to fill it up to a guest, as in the northern towns, were among Bedouins an injury, and of such bitter meaning, "This drink thou and depart."

NUBIAN SLAVE GIRL WITH COFFEE SERVICE, PERSIA

Then is often seen a contention in courtesy amongst them, especially in any greater assemblies, who shall drink first. Some man that receives the *fenjeyn* in his turn will not drink yet — he proffers it to one sitting in order under him, as to the more honourable; but the other putting off with his hand will answer *ebbeden*, "Nay, it shall never be, by Ullah! but do thou drink." Thus licensed, the humble man is despatched in three sips, and hands up his empty *fenjeyn*. But if he have much insisted, by this he opens his willingness to be reconciled with one not his friend. That neighbor, seeing the company of coffee-drinkers watching him, may with an honest grace receive the cup, and let it seem not willingly; but an hard man will sometimes rebut the other's gentle proffer.

Some may have taken lower seats than becoming their *sheykhly* blood, of which the nomads are jealous; entering untimely, they sat down out of order, sooner than trouble all the company. A *sheykh*, coming late and any business going forward, will often sit far out in the assembly; and show himself a popular person in this kind of honourable humility. The more inward in the booth is the higher place; where also is, with the *sheykhs*, the seat of a stranger. To sit in the loose circuit without and before the tent, is for the common sort. A tribesman arriving presents himself at that part or a little lower, where in the eyes of all men his pretension will be well allowed; and in such observances of good nurture, is a nomad man's honour among his tribesmen. And this is nigh all that serves the nomad for a conscience, namely, that which men will hold of him. A poor person, approaching from behind, stands obscurely, wrapped in his tattered mantle, with grave ceremonial, until those sitting indolently before him in the sand shall vouchsafe to take notice of him; then they rise unwillingly, and giving back

enlarge the coffee-circle to receive him. But if there arrive a *sheykh*, a coffee-host, a richard amongst them of a few cattle, all the coxcomb companions within will hail him with their pleasant adulation *taad henneyi*, "Step thou up hither."

The astute Fukara *sheukh* surpass all men in their coffee-drinking courtesy, and Zeyd himself was more than any large of this gentlemen-like imposture: he was full of swaggering complacence and compliments to an humbler person. With what suavity could he encourage, and gently too compel a man, and rising himself yield him parcel of another man's room! In such fashions Zeyd showed himself a bountiful great man, who indeed was the greatest niggard. The cups are drunk twice about, each one sipping after other's lips without misliking; to the great coffee *sheykhs* the cup may be filled more times, but this is an adulation of the coffee-server. There are some of the Fukara *sheukh* so delicate Sybarites that of those three bitter sips, to draw out all their joyance, twisting, turning, and tossing again the cup, they could make ten. The coffee-service ended, the grounds are poured out from the small into the great store-pot that is reserved full of warm water: with the bitter lye the nomads will make their next bever, and think they spare coffee.

Here is an Arabian recipe[3] for making coffee as given by Kadhi Hodhat, the best informed man of his time:

Tadj - Eddin - Aid - Almaknab - ben - Yacoub - Mekki Molki, chief of all the cantons of Hedjaz, (May God have mercy on him!) I learned it when once in his company at the time of the Holy Feasts. . . He informed me that nothing is more beneficial than to drink cold water before coffee, because it lessens the dryness of the coffee and thus taken it does not cause insomnia to the same degree. The poet did not forget to explain this manner of taking coffee:

As with art 'tis prepared, one should drink it with art.
The mere commonplace drinks one absorbs with free heart;
But this — once with care from the bright flame removed,
And the lime set aside that its value has proved —
Take it first in deep draughts, meditative and slow,
Quit it now, now resume, thus imbibe with gusto;
While charming the palate it burns yet enchants,
In the hour of its triumph the virtue it grants
Penetrates every tissue; its powers condense,
Circulate cheering warmths, bring new life to each sense.
From the cauldron profound spiced aromas unseen
Mount to tease and delight your olfactories keen,
The while you inhale with felicity fraught,
The enchanting perfume that a zephyr has brought.

Gone are the "luxurious and magnificent" coffee houses of Constantinople (if they ever existed — at least as we understand luxury and magnificence) which first brought the beverage world-wide fame; such *caffinets* as the one pictured by Thomas Allom and described by the Rev. Robert Walsh, in *Constantinople, Illustrated:*

PERSIAN COFFEE SERVICE, 1737

The caffinet, or coffee-house, is something more splendid, and the Turk expends all his notions of finery and elegance on this, his favorite place of indulgence. The edifice is generally decorated in a very gorgeous manner, supported on pillars, and open in front. It is surrounded on the inside by a raised platform, covered with mats or cushions, on which the Turks sit cross-legged. On one side are musicians, generally Greeks, with mandolins and tambourines, accompanying singers, whose melody consists in vociferation; and the loud and obstreperous concert forms a strong contrast to the stillness and taciturnity of Turkish meetings. On the opposite side are men, generally of a respectable class, some of whom are found here every day, and all day long, dozing under the double influence of coffee and tobacco. The coffee is served in very small cups, not larger than egg-cups, grounds and all, without cream or sugar, and so black, thick, and bitter that it has been aptly compared to "stewed soot". Besides the ordinary chibouk for tobacco, there is another implement, called narghillai, used for smoking

[3] de Sacy, Baron Antoine Isaac Silvestre. *Chrestomathie Arabe.* Paris, 1806, (vol. 2).

In a Turkish Coffee House

in a caffinet, of a more elaborate construction. It consists of a glass vase, filled with water, and often scented with distilled rose or other flowers. This is surmounted with a silver or brazen head, from which issues a long flexible tube; a pipe-bowl is placed on the top, and so constructed that the smoke is drawn, and comes bubbling up through the water, cool and fragrant to the mouth. A peculiar kind of tobacco, grown at Shiraz in Persia, and resembling small pieces of cut leather, is used with this instrument.

Certainly there never was any such thing as a coffee-house architecture. It may be that up to the time of Abdul Hamid, when money was more plentiful than it has been for the past fifty years, there were coffee houses more comfortably appointed than now exist.

The coffee house in a modernized form is, however, quite as numerous in Turkey as in the days of Amurath III and the notorious Kuprili.

H. G. Dwight[4] writing on the present day Turkish coffee house, says:

There are thoroughfares in any Turkish city that carry on almost no other form of traffic. There is no quarter so miserable or so remote as to be without one or two. They are the clubs of the poorer classes. Men of a street, a trade, a province, or a nationality — for a Turkish coffee-house may also be Albanian, Armenian, Greek, Hebrew, Kurd, almost anything you please — meet regularly when their work is done, at coffee-houses kept by their own people. So much are the humbler coffee-houses frequented by a fixed clientèle that a student of types or dialects may realize for himself how truly they used to be called Schools of Knowledge.

The arrangement of a Turkish coffee-house is of the simplest. The essential is that the place should provide the beverage for which it exists and room for enjoying the same. A sketch of a coffee-shop may often be seen on the street, in a scrap of shade or sunshine according to the season, where a stool or two invite the passer-by to a moment of contemplation. Larger establishments, though they are rarely very large, are most often installed in a room longer than it is wide, having as many windows as possible at the street end and what we would call the bar at the other. It is a bar that always makes me regret I do not etch, with its pleasing curves, its high lights of brass and porcelain striking out of deep shadow, and its usually picturesque *kahvehji*.

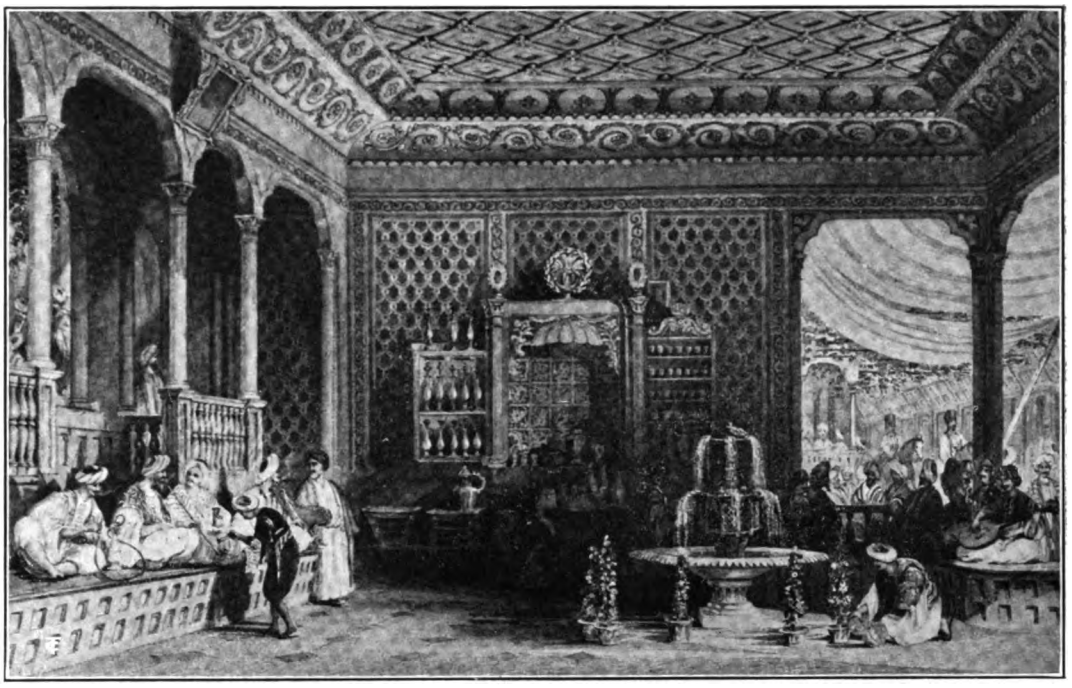
You do not stand at it. You sit on one of the benches running down the sides of the room. They are more or less comfortably cushioned, though sometimes higher and broader than a foreigner finds to his taste. In that case you slip off your shoes, if you would do as the Romans do, and tuck your feet up under you. A table stands in front of you to hold your coffee — and often in summer an aromatic pot of basil to keep the flies away. Chairs or stools are scattered about. Decorative Arabic texts, sometimes wonderful prints, adorn the walls. There may even be hanging rugs and china to entertain your eyes. And there you are.

The habit of the coffee-house is one that requires a certain leisure. You must not bolt coffee as you bolt the fire-waters of the West, without ceremony, in retreats withdrawn from the public eye. Being a less violent and a less shameful passion, I suppose, it is indulged in with more of the humanities. The etiquette of the coffee-house, of those coffee-houses which have not been too much infected by Europe, is one of their most characteristic features. Something like it prevails in Italy, where you tip your hat on entering and leaving a *caffè*. In Turkey, however, I have seen a new-comer salute one after another each person in a crowded coffee-room, once on entering the door and again after taking his seat, and be so saluted in return — either by putting the right hand to the heart and uttering the greeting *Merhabah*, or by making the *temennah*, that triple sweep of the hand which is the most graceful of salutes. I have also seen an entire company rise upon the entrance of an old man, and yield him the corner of honor.

Such courtesies take time. Then you must wait for your coffee to be made. To this end coffee, roasted fresh as required by turning in an

Roasting Coffee Before a Cafe, Turkey

[4] *Scribner's Magazine*, 1913 (vol. liii: no. 5: p. 620); and Dwight, H. G., *Constantinople, Old and New*, New York, 1915. Copyright by Charles Scribner's Sons.



INTERIOR OF A TURKISH CAFFINET, EARLY NINETEENTH CENTURY—AFTER ALLAN

iron cylinder over a fire of sticks and ground to the fineness of powder in a brass mill, is put into a small uncovered brass pot with a long handle. There it is boiled to a fròth three times on a charcoal brazier, with or without sugar as you prefer. But to desecrate it by the admixture of milk is an unheard of sacrilege. Some *kahvehjis* replace the pot in the embers with a smart rap in order to settle the grounds. You in the meanwhile smoke. That also takes time, particularly if you "drink" a *narguileh*, as the Turks say. This is familiar enough in the West to require no great description. It is a big carafe with a metal top for holding tobacco and a long coil of leather tube for inhaling the water-cooled fumes thereof. The effect is wonderfully soothing and innocent at first, though wonderfully deadly in the end to the novice. The tobacco used is not the ordinary weed, but a much coarser and stronger one called *tunbeki*, which comes from Persia. The same sort of tobacco used to be smoked a great deal in shallow red earthenware pipes with long mouthpieces. They are now chiefly seen in antiquity shops.

When your coffee is ready it is poured into an after-dinner coffee-cup or into a miniature bowl, and brought to you on a tray with a glass of water. A foreigner can almost always be spotted by the manner in which he finally partakes of these refreshments. A Turk sips his water first, partly to prepare the way for the coffee, but also because he is a connoisseur of the former liquid as other men are of stronger ones. And he lifts his coffee-cup by the saucer, whether it possess a handle or no, managing the two together in a dexterous way of his own. The current price for all this, not including the water-pipe, is ten paras — a trifle over a cent — for which the *kahvehji* will cry you "Blessing". More pretentious establishments charge twenty paras, while a giddy few rise to a piaster — not quite five cents — or a piaster and a half. That, however, begins to look like extortion. And mark that you do not tip the waiter. I have often been surprised to be charged no more than the tariff, although I gave a larger piece to be changed and it was perfectly evident that I was a foreigner. That is an experience which rarely befalls a traveller among his own coreligionaries. It has even happened to me, which is rarer still, to be charged nothing at all, nay, to be steadfastly refused when I persisted in attempting to pay, simply because I was a foreigner, and therefore a guest.

There is no reason, however, why you should go away when you have had your coffee — or your glass of tea — and your smoke. On the contrary, there are reasons why you should stay, particularly if you happen into the coffee-house not too long after sunset. Then coffee-houses of the most local color are at their best. Earlier in the day their clients are likely to be at work. Later they will have disappeared altogether. For Constantinople has not quite forgotten the habits of the tent. Stamboul, except during the holy month of Ramazan, is a deserted city at night. But just after dark it is full of a life which an outsider is often content simply to watch through the lighted windows of coffee-rooms. These are also barber-shops, where men have shaved not only their chins, but different parts of their heads according to their "countries". In them likewise

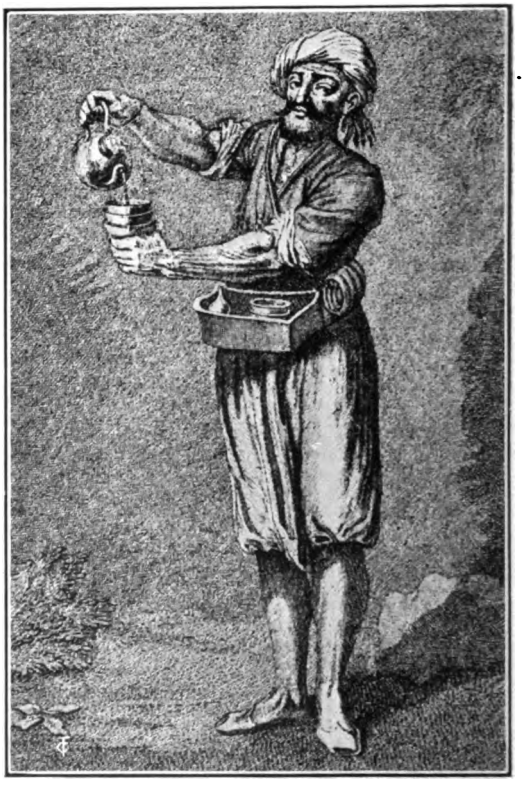
COFFEE MAKING IN TURKEY

checkers, the Persian backgammon, and various games of long narrow cards are played. They say that Bridge came from Constantinople. Indeed, I believe a club of Pera claims the honor of having communicated that passion to the Western World. But I must confess that I have yet to see an open hand in a coffee-house of the people.

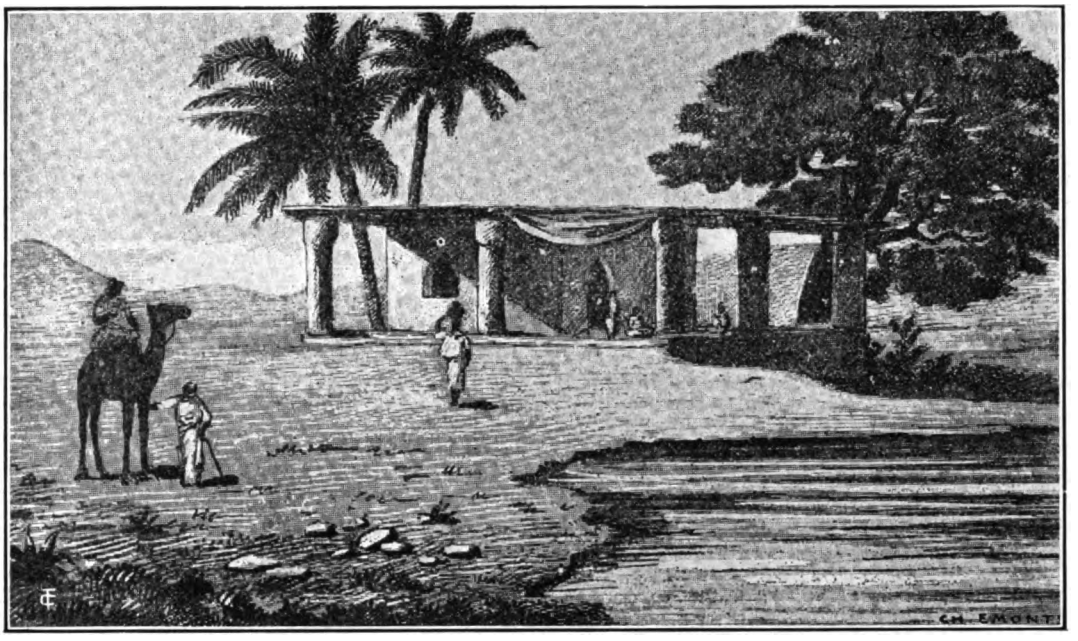
One of the pleasantest forms of amusement to be obtained in coffee-houses is unfortunately getting to be one of the rarest. It is that afforded by itinerant story-tellers, who still carry on in the East the tradition of the troubadours. The stories they tell are more or less on the order of the Arabian Nights, though perhaps even less suitable for mixed companies — which for the rest are never found in coffee-shops. These men are sometimes wonderfully clever at character monologue or dialogue. They collect their pay at a crucial moment of the action, refusing to continue until the audience has testified to the sincerity of its interest by some token more substantial.

Music is much more common. There are those, to be sure, who find no music in the sounds poured forth oftenest by a gramophone, often by a pair of gypsies with a flaring pipe and two small gourd drums, and sometimes by an orchestra so-called of the fine lute — a company of musicians on a railed dais who sing long songs while they play on stringed instruments of strange curves. For myself I know too little of music to tell what relation the recurrent cadences of those songs and their broken rhythms may bear to the antique modes. But I can listen, as long as musicians will perform, to those infinite repetitions, that insistent sounding of the minor key. It pleases me to fancy there a music come from far away — from unknown river gorges, from camp-fires glimmering on great plains. Does not such darkness breathe through it, such melancholy, such haunting of elusive airs? There are flashes too of light, of song, the playing of shepherd's pipes, the swoop of horsemen and sudden outcries of savagery. But the note to which it all comes back is the monotone of a primitive life, like the day-long beat of camel bells. And more than all, it is the mood of Asia, so rarely penetrated, which is neither lightness or despair.

There are seasons in the year when these various forms of entertainment abound more than at others, as Ramazan and the two Bairams. Throughout the month of Ramazan the purely Turkish coffee-houses are closed in the daytime, since the pleasures which they minister may not then be indulged in; but they are open all night. It is during that one month of the year that Karaghieuz, the Turkish shadow-show, may be seen in a few of the larger coffee-shops. The Bairams are two festivals of three and four days respectively, the former of which celebrates the close of Ramazan, while the latter corresponds in certain respects to the Jewish Passover. Dancing is a particular feature of the coffee-houses in Bairam. The Kurds, who carry the burdens of Constantinople on their backs, are above all other men given to this form of exercise — though the Lazzes, the boatmen, vie with them.



STREET COFFEE VENDER IN THE LEVANT, 1714



A Coffee House in Syria — after Jardin

One of these dark tribesmen plays a little violin like a pochelle, or two of them perform on a pipe and a big drum, while the others dance round them in a circle, sometimes till they drop from fatigue. The weird music and the picturesque costumes and movements of the dancers make the spectacle one to be remembered.

Christian coffee-houses also have their own festal seasons. These coincide in general with the festivals of the church. But every quarter has its patron saint, the saint of the local church or of the local holy well, whose feast is celebrated by a three-day *panayiri*. The street is dressed with flags and strings of colored paper, tables and chairs line the sidewalk, and libations are poured forth in honor of the holy person commemorated. For this reason, and because of the more volatile character of the Greek, the general note of his merrymaking is louder than that of the Turk. One may even see the scandalous spectacle of men and women dancing together at a Greek *panayiri*. The instrument which sets the key of these orgies is the *lanterna*, a species of hand-organ peculiar to Constantinople. It is a hand-piano rather, of a loud and cheerful voice, whose Eurasian harmonies are enlivened by a frequent clash of bells.

What first made coffee-houses suspicious to those in authority, however, is their true resource — the advantages they offer for meeting one's kind, for social converse and the contemplation of life. Hence it must be that they have so happy a tact for locality. They seek shade, pleasant corners, open squares, the prospect of water or wide landscapes. In Constantinople they enjoy an infinite choice of site, so huge is the extent of that city, so broken by hill and sea, so varied in its spectacle of life. The commonest type of city coffee-room looks out upon the passing world from under a grape-vine or a climbing wistaria.

Coffee-houses of distinction are to be found also in the Place of the Pines overlooking the Marble Sea, on Giant's Mountain, in the Landing Place of the Manslayer, and along the rivers that flow into the Golden Horn.

Originally the Turkish method of preparing coffee was the Arabian method, and it is so described by Mr. Fellows in his *Excursions through Asia Minor:*

Each cup is made separately, the little saucepan or ladle in which it is prepared being about an inch wide and two deep; this is more than half filled with coffee, finely pounded with a pestle and mortar, and then filled up with water; after being placed for a few seconds on the fire, the contents are poured, or rather shaken, out (being much thicker than chocolate) without the addition of cream or sugar, into a china cup of the size and shape of half an egg-shell, which is inclosed in one of ornamented metal for convenience of holding in the hand.

Later, the Turks sought to improve the method by adding sugar (a concession to the European sweet tooth) during the boiling process. The improved Turkish recipe is as follows:

First boil the water. For two cups of the beverage add three lumps of sugar and return the boiler to the fire. Add two teaspoonfuls of powdered coffee, stirring well and let the pot

boil up four times. Between each boiling the pot is to be removed from the fire and the bottom tapped gently until the froth on the top subsides. After the last boiling pour the coffee first into one cup and then the other, so as to evenly divide the froth.

In Syria and Palestine the Turkish-Arabian methods are followed. The brazen dippers, or *ibriks,* are used for boiling.

CAFETAN
Oriental coffee-house keeper's costume

In the Near East, coffee manners and customs are much the same today as they were fifty or even one hundred years ago. Witness Damascus. The following pen picture of the cafés in this ancient city was written in 1836 to accompany the drawing by Bartlett and Purser, which is reproduced here; but it might have been written in 1922, so slight have been the changes in the setting or the spirit of the original coffee house that Shemsi first brought to Constantinople from Damascus in 1554.[5]

The Cafés of the kind represented in the plate are, perhaps, the greatest luxury that a stranger finds in Damascus. Gardens, kiosques, fountains, and groves are abundant around every Eastern capital: but Cafés on the very bosom of a rapid river, and bathed by its waves, are peculiar to this ancient city: they are formed so as to exclude the rays of the sun, while they admit the breeze; the light roof is supported by slender rows of pillars, and the building is quite open on every side.

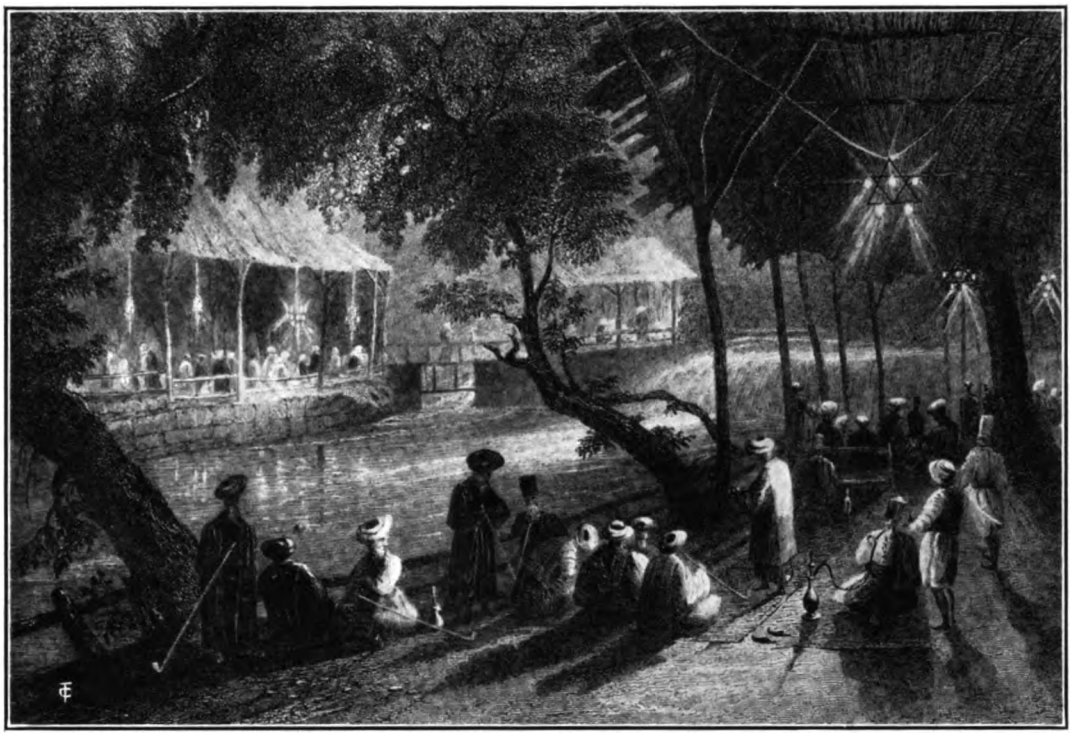
A few of these houses are situated in the skirts of the town, on one of the streams, where the eye rests on the luxuriant vegetation of garden and wood: others are in the heart of the city: a flight of steps conducts to them from the sultry street, and it is delightful to pass in a few moments from the noisy, shadeless thoroughfare, where you see only mean gateways and the gable-ends of edifices, to a cool, grateful, calm place of rest and refreshment, where you can muse and meditate in ease and luxury, and feel at every moment the rich breeze from the river. In two or three instances, a light wooden bridge leads to the platform, close to which, and almost out of it, one or two large and noble trees lift the canopy of their spreading branches and leaves, more welcome at noon-day than the roofs of fretted gold in the "Arabian Nights." The high pavilion roof and the pillars are all constructed of wood: the floor is of wood, and sometimes of earth, and is regularly watered, and raised only a few inches above the level of the stream, which rushes by at the feet of the customer, which it almost bathes, as he sips his coffee or sherbet. Innumerable small seats cover the floor, and you take one of these, and place it in the position you like best.

Perhaps you wish to sit apart from the crowd, just under the shadow of the tree, or in some favourite corner where you can smoke, and contemplate the motley guests, formed into calm and solemn groups, who wish to hold no communion with the Giaour. There is ample food here for the observer of character, costume and pretension: the tradesman, the mechanic, the soldier, the gentleman, the dandy, the grave old man, looking wise on the past and dimly on the future: the hadge, in his green turban, vain of his journey to Mecca, and drawing a long bow in his tales and adventures: the long straight pipe, the hookah with its soft curling tube and glass vase, are in request: but the poorer argille is most commonly used.

From sunrise to set, these houses are never empty: we were accustomed to visit one of them early every morning, before breakfast, and very many persons were already there: yet this "balmy hour of prime" was the most silent and solitary of the whole day; it was the coolest also: the rising sun was glancing redly on the

STREET COFFEE SERVICE IN CONSTANTINOPLE

[5] Carne, John. *Syria, the Holy Land.* London, 1836 (p. 69).



A Riverside Cafe in Damascus, Nineteenth Century
After Bartlett and Purser

waters: there was as yet no heat in the air, and the little cup of Mocha coffee and the pipe were handed by an attendant as soon as the stranger was seated. His favourite Café was the one represented in the plate: the river is the Barrada, the ancient Pharpar. Never was the sound of many waters so pleasant to the ear as in Damascus: the air is filled with the sound, with which no clash of tongues, rolling of wheels, march of footman or horsemen, mingle: the numerous groups who love to resort here are silent half the time; and when they do converse, their voice is often "low, like that of a familiar spirit," or in short grave sentences that pass quickly from the ear.

Yet much, very much of the excitement of the life of the Turk in this city, is absorbed in these coffee-houses: they are his opera, his theatre, his conversazione: soon after his eyes are unclosed from sleep, he thinks of his Café, and forthwith bends his way there: during the day he looks forward to pass the evening on the loved floor, to look on the waters, on the stars above, and on the faces of his friends; and at the moonlight falling on all. Mahomet committed a grievous error in the omission of coffee-houses in a future state: had he ever seen those of Damascus, he would surely have given them a place on his rivers of Paradise, persuaded that true believers must feel a melancholy void without them.

There is no ornament or richness about these houses: no sofas, mirrors, or drapery, save that afforded by a few evergreens and creepers: the famous silks and damasks of Damascus have no place here; all is plain and homely; yet no Parisian Café, with its beautiful mirrors, gilding, and luxuriousness, is so welcome to the imagination and senses of the traveller. After wandering many days over dry, and stony, and desert places, where the lip thirsted for the stream, is it not delicious to sit at the brink of a wild, impetuous torrent, to gaze on its white foam and breaking waves, till you can almost feel their gush in every nerve and fibre, and can bathe your very soul in them. And while you slowly smoke your pipe of purest tobacco, the sands of the desert, and their burning sun, rise again before you, when you prayed for even the shadow of a cloud on your way. The banks are in some parts covered with wood, whose soft green verdure contrasts beautifully with the clear torrent, and almost droops into its bosom.

Near the coffee-houses are one or two cataracts several feet high, and the perpetual sound of their fall, and the coolness they spread around, are exquisite luxuries — in the heat of day, or in the dimness of evening. There are two or three Cafés constructed somewhat differently from those just described: a low gallery divides the platform from the tide; fountains play on the floor, which is furnished with very plain sofas and cushions; and music and dancing always abound, of the most unrefined description.

The only intellectual gratification in these places is afforded by the Arab story-tellers,

among whom are a few eminent and clever men: soon after his entrance, a group begins to form around the gifted man, who, after a suitable pause, to collect hearers or whet their expectations, begins his story. It is a picturesque sight — of the Arab with his wild and graceful gestures, and his auditory, hushed into deep and child-like attention, seated at the edge of the rushing tide, while the narrator moves from side to side, and each accent of his distinct and musical voice is heard throughout the Café. The building directly opposite is another house, of a similar kind in every respect. There are a few small Cafés, more select as to company, where the Turkish gentlemen often go, form dinner parties, and spend the day.

Night is the propitious season to visit these places: the glare of the sun, glancing on the waters, is passed away; the company is then most numerous, for it is their favourite hour; the lamps, suspended from the slender pillars, are lighted; the Turks, in the various and brilliant colours of their costume, crowd the platform, some standing moveless as the pillars beside them, their long pipe in their hand — noble specimens of humanity, if intellect breathed within: some reclining against the rails, others seated in groups, or solitary as if buried in "lonely thoughts sublime"; while the rush of the falling waters is sweeter music than that of the pipe and the guitar, that faintly strive to be heard. The cataract in the plate is a very fine one; on its foam the moonlight was lovely: we passed many an hour here on such a night, the clear waters of the Pharpar, as they rolled on, reflecting each pillar, each Damascene slowly moving by in his waving garments. The glare of the lamps mingled strangely with the moonlight, that rested with a soft and vivid glory on the waters, and fell beneath pillar and roof on the picturesque groups within.

The slender brass coffee grinders sometimes serve as a combination utensil in the equipment of the Turkish officer. Frequently they are made of silver. They might be called collapsible, convertible coffee kits, as they are made to serve as a combination coffee pot, mill, can, and cup. The green or roasted beans are kept in the lower section. It takes but a minute to unscrew the apparatus. To make a cup of coffee, the beans are dumped out and three or four of them are put in the middle section. The steel crank is fitted over the squared rod projecting from the middle section, which revolves, setting in motion the grinding apparatus inside. The ground coffee falls into the bottom section, and water is added. The pot is placed on the fire, and the contents brought to a boil. The coffee pot serves as a cup. The process requires but a few minutes. The cup is rinsed out, the beans replaced, the utensils put together, the whole thing is slipped into the officer's tunic, and he goes on, refreshed.

In Persia, where tea is mostly drunk, the Turkish-Arabian methods of making coffee are followed. In Ceylon and India, the same applies to the native population, but the whites follow the European practise. In India, many people look upon coffee as just a *bonne bouche* — a "chaser." A well known English tea firm has had some success in India with a tinned "French coffee", which is a blend of Indian coffee and chicory.

European methods obtain in making coffee in China and Japan, and in the French and Dutch colonies. When traveling in the Far East one of the greatest hardships the coffee lover is called upon to endure is the European bottled coffee extract, which so often supplies lazy chefs with the makings of a most forbidding cup of coffee.

In Java, a favorite method is to make a strong extract by the French drip process and then to use a spoonful of the extract to a cup of hot milk — a good drink when the extract is freshly made for each service.

Coffee Making in Europe

In Europe, the coffee drink was first sold by lemonade venders. In Florence those who sold coffee, chocolate, and other beverages were not called *caffetiéri* (coffee sellers) but *limonáji* (lemonade venders). Pascal's first Paris coffee shop served other drinks as well as coffee; and Procope's café began as a lemonade shop. It was only when coffee, which was an afterthought, began to lead the other beverages, that he gave the name café to his whole refreshment place.

Today, nearly every country in Europe can supply the two extremes of coffee making. In Paris and Vienna, one may find it brewed and served in its highest perfection; but here too it is frequently found as badly done as in England, and that is saying a good deal. The principal difficulty seems to be in the chicory flavor, for which long years of use has cultivated a taste, with most people. Now coffee-and-chicory is not at all a bad drink: indeed the author confesses to have developed a certain liking for it after a time in France — but it is not coffee. In Europe, chicory is not regarded as an adulterant — it is an addition, or modifier, if you please. And so many people have acquired a coffee-and-chicory taste, that it is doubtful if they would appreciate a real cup of coffee should

COFFEE AL FRESCO IN JERUSALEM

they ever meet it. This, of course, is a generalization; and like all generalizations, is dangerous, for it *is* possible to obtain good coffee, properly made, in any European country, even England, in the homes of the people, but seldom in the hotels or restaurants.

AUSTRIA. Coffee is made in Austria after the French style, usually by the drip method or in the pumping percolator device, commonly called the Vienna coffee machine. The restaurants employ a large-size urn fitted with a combination metal sieve and cloth sack. After the ground coffee has infused for about six minutes, a screw device raises the metal sieve, the pressure forcing the liquid through the cloth sack containing the ground coffee.

Vienna cafés are famous, but the World War has dimmed their glory. It used to be said that their equal could not be found for general excellence and moderate prices. From half-past eight to ten in the morning, large numbers of people were wont to breakfast in them on a cup of coffee or tea, with a roll and butter. *Mélangé* is with milk; "brown" coffee is darker, and a *schwarzer* is without milk. In all the cafés the visitor may obtain coffee, tea, liqueurs, ices, bottled beer, ham, eggs, etc. The Café Schrangl in the Graben is typical. Then there are the dairies, with coffee, a unique institution. In the *Prater* (public park) there are many interesting cafés.

Charles J. Rosebault says in the *New York Times:*

The café of Vienna has been imitated all over the world — but the result has never failed to be an imitation. The nearest approach to the genuine in my experience was the upstairs room of the old Fleischman Café in New York. That was because the average New Yorker knew it not and it remained sacred to the internationalists: the musicians, artists, writers, and other Bohemians to whom had been intrusted the secret of its existence. It is the spirit that counts, and it was the spirit of its frequenters that made the Vienna café. It was everyman's club, and everywoman's, too, where one went to relax and forget all the worries of existence, to look over papers and magazines from all parts of the world and printed in every known language, to play chess or skat or taracq, to chat with friends and to drink the inimitable Viennese coffee, the fragrance of which can no more be described than the perfume of last year's violets.

The café was filled after the noon meal, when busy men took their coffee and smoked; again around five o'clock, when all the world and his wife paraded along the Graben and the Karntner Strasse, and then dropped into a

Photograph by Burton Holmes

THE CAFE SCHRANGL IN THE GRABEN, VIENNA, THE CITY THAT COFFEE MADE FAMOUS

favorite café for coffee or chocolate and cakes — horns and crescents of delicious dough filled with jam or, possibly, the wonderful Kugelhupf, in comparison with which our sponge is like unto lead; finally in the evening, when there were family parties and those returning from theatres and concerts and opera.

While the café life of Vienna has been nearly killed by the World War, it is to be hoped that time will restore at least something of its former glory. In spite of the stories of plundering bands of Bolshevists that in the latter part of 1921 wrecked some of the better known places, we read that Oscar Straus, composer of *The Chocolate Soldier,* is living in comparative luxury in Vienna, and spends most of his time in the cafés, where he is to be found usually from two until five in the afternoon and from eleven o'clock at night until some early hour of the morning "surrounded by musicians of lesser note and wealth, whom, to a degree, he supports; also with him being many of the leading composers, librettists, actors, actresses, and singers of Vienna."

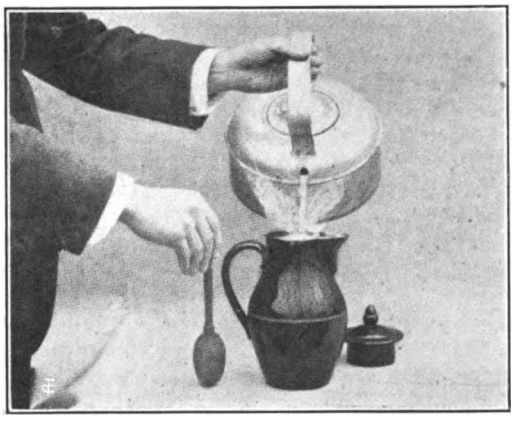
For Vienna coffee, the liquor is usually made in a pumping percolator or by the drip process. In normal times it is served two parts coffee to one of hot milk topped with whipped cream. During 1914 - 18 and the recent post-war period, however, the sparkling crown of delicious whipped cream gave way to condensed milk, and saccharine took the place of sugar.

BELGIUM. In Belgium, the French drip method is most generally employed. Chicory is freely used as a modifier. The greatest coffee drinker among reigning monarchs is said to be the King of the Belgians. His majesty takes a cup of coffee before breakfast, after breakfast, at his noonday meal, in the afternoon, after dinner, and again in the evening.

BRITISH ISLES. In the British Isles coffee is still being boiled; although the infusion, true percolation (drip), and filtration methods have many advocates. A favorite device is the earthenware jug with or without the cotton sack that makes it a coffee biggin. When used without the sack, the best practise is first to warm the jug. For each pint of liquor, one ounce (three dessert-spoonfuls) of freshly ground coffee is put in the pot. Upon it is poured freshly boiling water — three-fourths of the amount required. After stirring with a wooden spoon, the remainder of the water is poured in, and the pot is returned to the "hob" to infuse, and to settle for from three to five minutes. Some stir it a second time before the final settling.

The best trade authorities stress home-grinding, and are opposed to boiling the beverage. They advocate also its use as a breakfast beverage, after lunch, and after the evening meal.

From an American point of view, the principal defects in the English method of making coffee lie in the roasting, handling, and brewing. It has been charged that the beans are not properly cooked in the first place, and that they are too often stale before being ground. The English run to a light or cinnamon roast, whereas the best American practise requires a medium, high, or city roast. A fairly high shade of brown is favored on the South Downs with a light shade for Lancashire, the West Riding of Yorkshire, and the south of Scotland. The trade demands, for the most part, a ripe chestnut brown. Wholesale roasting is done by gas and coke machines; while retail dealers use mostly a small type of inner-heated gas machine. The large gas machines (with capacities running from twenty-five to seven hundred pounds) have external air-blast burners, direct and indirect burners, sliding burners, etc. The best known are the Faulder and Moorewood machines. In the Uno, a popular retail machine, roasting seven to fourteen pounds at a time, the coffee beans are placed in the space between outer and inner concentric cylinders, one made of perforated steel, and the other of wire gauze, revolving together. A gas flame of the Bunsen type burns inside the inner cylinder, its heat traversing the outer, or coffee cylinder, while the fumes are driven off through the open ends. The roasting coffee may be viewed through a mica or wire-gauze panel inserted in the wall of the outer cylinder. The Faulder machine has an external flame, a capacity of from seven to fourteen pounds; and there are quick gas machines, with capacities ranging from three pounds to two hundred and twenty-four pounds, for the retail trade.



FAVORITE ENGLISH COFFEE-MAKING METHOD

A CAFE OF YE MECCA COMPANY, LONDON

In recent years there has been a marked improvement in English coffee roasting, due to the intelligent study brought to bear upon the subject by leaders of the trade's thought, and by the retail distributer, who, in the person of the retail grocer, is, generally speaking, better educated to his business than the retail grocer in any other country. Years ago, it was the practise to use butter or lard to improve the appearance of the bean in roasting; but this is not so common as formerly.

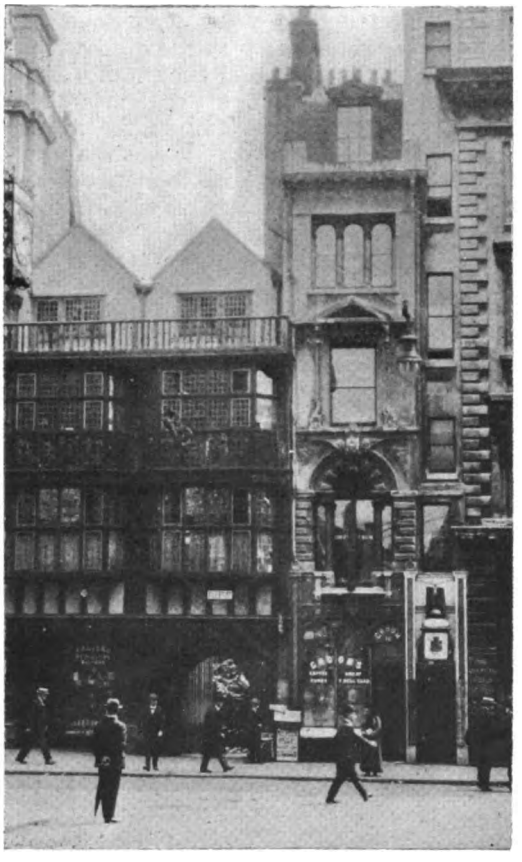
The British consumer, however, will need much instruction before the national character of the beverage shows a uniform improvement. While the coffee may be more carefully roasted, better "cooked" than it was formerly, it is still remaining too long unsold after roasting, or else it is being ground too long a time before making. These abuses are, however, being corrected; and the consumer is everywhere being urged to buy his coffee freshly roasted and to have it freshly ground. Another factor has undoubtedly contributed to give England a bad name among lovers of good coffee, and that is certain tinned "coffees," composed of ground coffee and chicory, mixtures that attained some vogue for a time as "French" coffee. They found favor, perhaps, because they were easily handled. Package coffees have not been developed in England as in America; but there is a more or less limited field for them, and there are several good brands of absolutely pure coffee on the market.

The demi-tasse is a popular drink after luncheon, after dinner, and even during the day, especially in the cities. In London, there are cafés that make a specialty of it; places like Peel's, Groom's, and the Café Nero in the city; also the shops of the London Café Co., and Ye Mecca Co.

While, in the home, it is customary to steep the coffee; in hotels and restaurants some form of percolating apparatus, extractor, or steam machine is employed. There are the Criterion (employing a drip tray for making coffee in the Etzenberger style); Fountain; Platow; Syphon (Napier); and Verithing extractors, put out by Sumerling & Co. of London; and the well-known J. & S. rapid coffee-making machine, having an infuser, and producing coffee by steam pressure, manufactured by W. M. Still & Sons, Ltd., London.

American visitors complain that coffee in England is too thick and syrupy for their liking. Coffee in restaurants is served "white" (with milk), or black, in earthen, stone-ware, or silver pots. In chain restaurants, like Lyons' or the A. B. C., there is to be found on the tariff, "hot milk with a dash of coffee."

CAFE MONICO, PICCADILLY CIRCUS, LONDON



GROOM'S COFFEE HOUSE, FLEET STREET, LONDON

As to the boiling method, this is already generally discredited in the countries of western Europe. The steeping method so much favored in England may be responsible for some of the unkind things said about English coffee; because it undoubtedly leads to the abuse of over-infusion, so that the net result is as bad as boiling.

The vast majority of the English people are, however, confirmed tea drinkers, and it is extremely doubtful if this national habit, ingrained through centuries of use of "the cup that cheers" at breakfast and at tea time in the afternoon can ever be changed.

As already mentioned in this work, the London coffee houses of the seventeenth and eighteenth centuries gave way to a type of coffee house whose mainstay was its food rather than its drink. In time, these too began to yield to the changing influences of a civilization that demanded modern hotels, luxurious tea lounges, smart restaurants, chain shops, tea rooms, and cafés with and without coffee. A certain type of "coffee shop," with rough boarded stalls, sanded floors and "private rooms," frequented by lower class workingmen, were to be found in England for a time; but because of their doubtful character, they were closed up by the police.

Among other places in London where coffee may be had in English or continental style, mention should be made of the Café

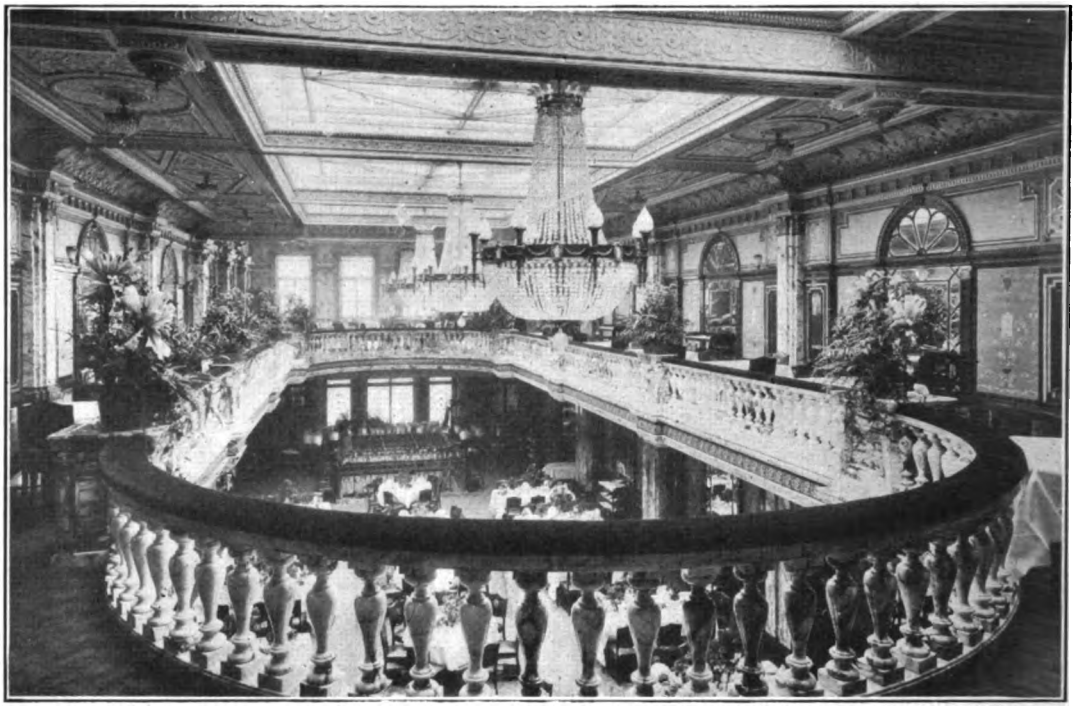
GATTI'S, IN THE STRAND, LONDON

Monico, a good place to drop in for a coffee and liqueur, and one of the pioneers of the modern restaurant; Gatti's, where *café filtré*, or coffee produced by the filtration method, is a specialty; the cosmopolitan Savoy with its popular tea lounge (teas, sixty cents); the Piccadilly Hotel, with its Louis XIV restaurant catering to refined and luxurious tastes; the Waldorf Hotel, with its American clientèle and its palm court (teas, thirty-six cents); the Cecil, with its palm court and tea balcony, also having a special attraction for Americans; Lyons' Popular Café (iced coffee, twelve cents); the Trocadero with its special Indian curries prepared by native cooks once each week; the Temple Bar restaurant, an attractive refectory owned by the semi-philanthropic Trust-Houses, Ltd., which runs some two hundred similar establishments throughout the country, serving alcoholic drinks but stressing non-intoxicating beverages, among them special Mocha at six and eight cents a cup; Slater's, Ltd., catering mostly to business folk in the city, there being about a score of restaurants and tea rooms under this name with retail shops attached; the British Tea Table Association, like Slater's, a grown-up sister of the olden bun shop of Queen Victoria's day; and the Kardomah chain of cafés, where one is reasonably sure to get a satisfying cup of coffee and a cake.

Supplementing the above, Charles Cooper, some time editor of the *Epicure* and *The Table*, has prepared for this work some notes on the evolution of the old-time London coffee houses into the present-day tea rooms, tea lounges, cafés, and restaurants for all comers. Mr. Cooper says of the transformation:

> The old-fashioned London coffee-house that flourished forty to fifty years ago has within the past thirty years been completely extinguished by the modern tea rooms. These old-fashioned establishments were mainly situated in and about the Strand and Fleet Street, the neighborhood of the Inns of Court, etc. They did not sacrifice much to outside show and decoration. They were divided into boxes or pews, and were generally speaking clean and well ordered; the prices were moderate, and the fare simple but superlatively good. There is nothing to equal it now. Chops were cooked in the grill. The tea and coffee were of the best; the hams were York hams and the bacon the best Wiltshire; they were the last places where real buttered toast was made. The art is now lost. They catered exclusively to men; and their clientèle consisted of journalists, artists, actors, men from the Inns of Court, students, *et al.* A man living in chambers could breakfast comfortably at one of these places, and read all the morning papers at his ease. The most westerly perhaps of the old houses was Stone's in Panton Street, Haymarket, which has recently been sold. Groom's in Fleet Street, where a good cup of coffee may still be had, is principally frequented by barristers about the luncheon hour. They are usually men who lunch lightly.
>
> The tea rooms, as I have said, have killed the coffee houses. At the time the latter flourished, there were no facilities in London for a woman, unattended by a man, to obtain refreshment beyond a weak cup of tea at a few confectioners'. It mattered the less in the days when the girl clerk had not come into

TEA LOUNGE OF HOTEL SAVOY, LONDON



LYONS' "POPULAR CAFE," PICCADILLY — ONE OF MANY OPERATED UNDER THAT NAME

PALM COURT IN THE WALDORF HOTEL — A POPULAR RESORT FOR AMERICAN TRAVELERS

TWO POPULAR PLACES FOR COFFEE IN LONDON

being. When the field of women's employment widened, fresh requirements were created which the coffee shops did not meet.

The tea room pioneers in London were the Aërated Bread Company, familiarly known as the A. B. C. I think that coffee palaces in provincial industrial centers had been started; but as part of a temperance propaganda, to counteract the attractions of the public house. The Aërated Bread Company was founded about the middle of the past century for the manufacture and sale of bread made under the patent aërated process of Dr. Daugleish. The shops were opened for the sale of bread to the public for home consumption; but to give people an opportunity of testing it, facilities were provided for obtaining a cup of tea, and bread and butter, on the premises. This subsidiary object became in a short time the most important part of the company's business. It multiplied its shops, enlarged its bill of fare to include cooked foods; and while, nowadays, the A. B. C. and its rivals cater to many thousands daily, I doubt if anybody ever buys a loaf to take home.

The A. B. C. has many competitors, similar shops having been started by Lyons, Lipton, Slaters, Express Dairy Company, Cabin, Pioneer Cafés, and others. *Ex uno disce omnes.*

TEMPLE BAR RESTAURANT, LONDON

The fare in all these places is much alike, as are the general equipment, prices, and class of customers. They cater for a cheap class of business. In the busy centers they are frequented mostly by young men and girl clerks and shop assistants, by women in town, shopping, and such-like custom. Young employees can get a modest mid-day meal at a price to suit a shallow pocket. Before the war, the ruling price for a cup of tea, and a roll and butter, was fourpence, and the general tariff in proportion. Nowadays, the war has run up prices at least fifty percent. During the worst times of food control the fare was very scanty and very unappetizing. As a rule, it is plain and wholesome, with no pretense of being *recherché*. Tea is almost always very good; coffee not on the same level. Their tea rooms are all places designed for small, quick meals; and are in no sense lounges.

TEA BALCONY IN THE HOTEL CECIL, LONDON

Lyons have refreshment-houses of different grades. The Popular Café is a cut above the tea rooms, and so are the Corner Houses. Two years ago, the A. B. C. amalgamated with Buzard's, an old established confectioner's in Oxford Street — a famous cake-house.

The Monico and Gatti's appeal to a quite different class from that catered to by the tea shops, although perhaps not to what Mrs. Boffin would call "the highfliers of fashion" who frequent the lounges of the fashionable hotels. Gatti's original café was under the arches of Charing Cross station.

I may add about the Savoy that it was an outcome of the successful Gilbert and Sullivan

SLATER'S, A BETTER-CLASS CHAIN SHOP, LONDON

operas of the seventies, D'Oyly Carte having expended some of his profits on building the hotel on a piece of waste ground by the Savoy Theatre. He brought over M. Ritz from Monte Carlo to manage the hotel and restaurant, and Escoffier, the greatest chef of the day, to preside over the cuisine. They made the Savoy famous for its dinners, and it has always maintained a high reputation, although Escoffier, who has now retired, ruled later at the Carlton; and Ritz, at the hotel in Piccadilly which bears his name.

BULGARIA. In Bulgaria, Arabian-Turkish methods of making coffee prevail. The accompanying illustration shows a group in a caravan of the faithful on the annual pilgrimage to Mecca. The venerable Moslem, who is ambitious of becoming a hadji, is attended by his guards, distinguished by their fantastic dress; their glittering golden-hafted *hanjars,* stuck in their shawl

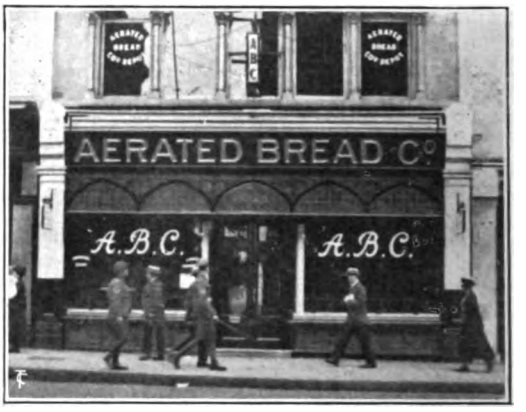
ST. JAMES'S RESTAURANT, PICCADILLY, LONDON

girdles; and their silver-mounted pistols; the grave turban replaced by a many-tasseled cap. Their accommodation is the stable of a khan, or serai, shared with their camel. Their refreshment is coffee, thick, black and bitter, served by the khanji in tiny egg-shaped cups.

In DENMARK and FINLAND coffee is made and served after the French and German fashion.

FRANCE. Were it not for the almost inevitable high roast and frequently the disconcerting chicory addition, coffee in France might be an unalloyed delight — at least this is how it appears to American eyes. One seldom, if ever, finds coffee improperly brewed in France — it is never boiled.

Second only to the United States, France consumes about two million bags of coffee annually. The varieties include coffee from



AN A. B. C. SHOP, LONDON

the East Indies; Mocha; Haitian (a great favorite); Central American; Colombian; and Brazils.

Although there are many wholesale and retail coffee roasters in France, home roasting persists, particularly in the country districts. The little sheet-iron cylinder roasters, that are hand-turned over an iron box holding the charcoal fire, find a ready sale even in the modern department stores of the big cities. In any village or city in France it is a common sight on a pleasant day to find the householder turning his

HALT OF CARAVANERS AT A SERAI, BULGARIA

CAFE DE LA PAIX, WHERE PARIS DRINKS ITS COFFEE OUTDOORS

roaster on the curb in front of his home. Emmet G. Beeson, in *The Tea and Coffee Trade Journal* gives us this vignette of rural coffee roasting in the south of France:

In a certain town in the south of France I saw an old man with an outfit a little larger than the home variety, a machine with a capacity of about ten pounds. Instead of a cylinder in which to roast his coffee, he had perched on a sheet-iron frame a hollow round ball made of sheet iron. In the top of this ball there was a little slide which was opened by the means of a metal tool. In the sheet-iron frame he had kindled his charcoal fire. Directly in front of his roaster was a home-made cooling pan, the sides of which were of wood, the bottom covered with a fine grade of wire screening.

On this particular afternoon, the old man had taken up his place on the curb; and a big black cat had taken advantage of the warmth offered by the charcoal fire and was curled up, sleeping peacefully in the pan nearest the fire. The old man paid no attention to the cat, but went on rotating his ball of coffee and puffing away pensively on his cigarette. When his coffee had become blackened and burned, and blackened and burned it was, he stopped rotating the ball, opened the slide in the top, turned it over, and the hot, burned coffee rolled out, and much to his delight, on the sleeping cat, which leaped out of the pan and scampered up the street and into a hole under an old building.

I afterward learned that this old fellow made a business of going about the town gathering up coffee from the houses along the way and roasting it at a few sous per kilo, much the same fashion as a scissors grinder plies his trade in an American town.

Quite a few grocers roast their own coffee in crude devices much like those described above; but the large coffee roasters are gradually eliminating this sort of procedure. There are at Havre several roasters, but only two of importance; one does a business of about two hundred and fifty bags a day, and the next largest has a capacity of about one hundred and sixty bags a day. In Paris, there are many coffee roasters, some quite large, comparatively speaking, one having a capacity of about seven hundred and fifty bags a day. Shopkeepers in Paris and other large cities roast their coffee fresh daily. The machines used are of the ball or cylinder type, employing gas fuel and turned by electric power. Invariably they stand where they may be seen from the street.

Sample-roasters, or testing tables, in France are conspicuous by their absence. Inquiry regarding this subject discloses that coffee is sold on description; and when the French trader is asked, "How do you know your delivery is up to description so far as cup quality is concerned?" he answers that this is arrived at from the general appearance and the smell of the coffee in the green. Perhaps one reason for the laxity in buying cup quality may

SIDEWALK ANNEX, CAFE DE LA PAIX, PARIS, WITH OPERA HOUSE IN BACKGROUND — SUMMER OF 1918

be explained by the fact that coffee is roasted very high, in fact it is burned almost to a charred state; and unless the coffee is unusually bad in character, the burned taste eliminates any foreign flavor it may have.

The fact that coffee was, and still is, quite generally sold to the consumer green, accounts for Central American coffees taking first place. Style takes preference over everything else when it comes to selling to a Frenchman.

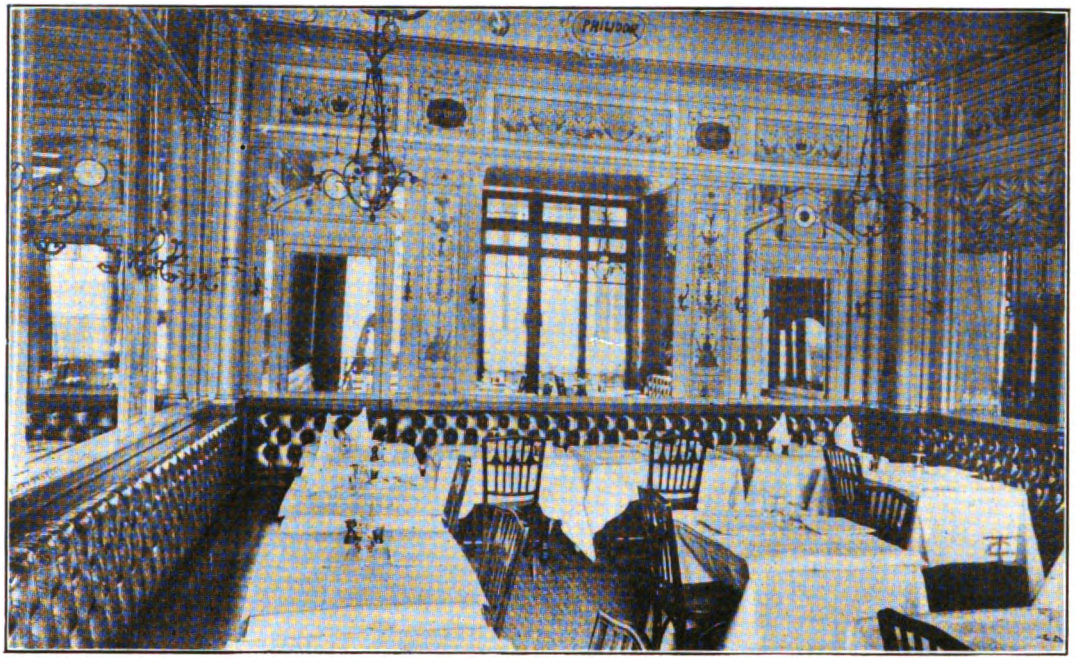
To the American coffee merchant it seems that the French are carrying their artistic tastes to an unreasonable extreme when they apply them to coffee; for coffee is grown to drink and not to look at.

Since the coming of the large coffee roaster, who delivers roasted coffee right down the line to the consumer, Santos has come in for its share of the business. The roasters are getting good results out of Santos blends, up to fifty percent and sixty percent with West Indian and Central American coffees. Rio is as much in disfavor in France as it is in the United States, perhaps more so.

In Brittany the demand is for peaberry coffee, no matter of what variety. This comes about from the fact that the people of this section of the country still do a great deal of their roasting at home, and have become accustomed to the use of peaberry coffee because they do not have the improved hand roasters, and still do a great deal of their roasting in pans in the ovens of their stoves. The peaberry coffee rolls about so nicely in the pan that they get a much more uniform roast.

Nearly all the coffee is ground at home, which is not a bad practise for the consumer; but perhaps works hardship on the dealer, who can mix some grade grinders into his blends without doing them any material harm. Where coffee mills are used in the stores, they are of the Strong-Arm family and of an ancient heritage. To get a growl out of the grocer in France, buy a kilo of coffee and ask him to grind it.

Package coffee and proprietary brands have not come into their own to the extent that they have in the United States, although there are at present two firms in Paris which have started in this business and are advertising extensively on billboards, in street cars, and in the subways. However, most coffee is still sold in bulk. The butter, egg, and cheese stores of France do a very large business in coffee. Prior to the war and high prices, there were some very large firms doing a premium business in coffee, tea, spices, etc. They



CAFE DE LA REGENCE, PARIS, SHOWING THE TYPICAL CONTINENTAL ARRANGEMENT OF SEATS

still exist, and have a very fine trade; but since the high prices of coffees and premiums, the business has gone down very materially. They operate by the wagon-route and solicitor method, just as some of our American companies do. One very large firm in Paris has been in this business for more than thirty years, operating branches and wagons in every town, village, and hamlet in France.

The consumption of coffee is increasing very materially in France; some say, on account of the high price of wine, others hold that coffee is simply growing in favor with the people. Among the masses, French breakfast consists of a bowl or cup of *café au lait*. or half a cup or bowl of strong black coffee and chicory, and half a cup of hot milk, and a yard of bread. The workingman turns his bread on end and inserts it into his bowl of coffee, allowing it to soak up as much of the liquid as possible. Then he proceeds to suck this concoction into his system. His approval is demonstrated by the amount of noise he makes in the operation.

Among the better classes, the breakfast is the same, *café au lait*, with rolls and butter, and sometimes fruit. The brew is prepared by the drip, or true percolator, method or by filtration. Boiling milk is poured into the cup from a pot held in one hand together with the brewed coffee from a pot held in the other, providing a simultaneous mixture. The proportions vary from half-and-half to one part coffee and three parts milk. Sometimes, the service is by pouring into the cup a little coffee then the same quantity of milk and alternating in this way until the cup is filled.

Coffee is never drunk with any meal but breakfast, but is invariably served *en demi-tasse* after the noon and the evening meals. In the home, the usual thing after luncheon or dinner is to go into the *salon* and have your demi-tasse and liqueur and cigarettes before a cosy grate fire. A Frenchman's idea of after-dinner coffee is a brew that is unusually thick and black, and he invariably takes with it his liqueur, no matter if he has had a cocktail for an appetizer, a bottle of red wine with his meat course. and a bottle of white wine with the salad and dessert course. When the demi-tasse comes along, with it must be served his cordial in the shape of cognac, benedictine. or crème de menthe. He can not conceive of a man not taking a little alcohol with his after-dinner coffee, as an aid, he says, to digestion.

In Normandy, there prevails a custom in connection with coffee drinking that is unique. They produce in this province

CAFE DE LA REGENCE IN 1922

great quantities of what is known as *cidre,* made from a particular variety of apple grown there — in other words, just plain hard cider. However, they distil this hard cider, and from the distillation they get a drink called *calvados.*

The man from Normandy takes half a cup of coffee, and fills the cup with *calvados,* sweetened with sugar, and drinks it with seeming relish. Ice-cold coffee will almost sizzle when *calvados* is poured into it. It tastes like a corkscrew, and one drink has the same effect as a crack on the head with a hammer. From the toddling age up, the Norman takes his *calvados* and coffee.

In the south of France they make a concoction from the residue of grapes. They boil the residue down in water, and get a drink called *marc;* and it is used in much the same way as the Norman in the north uses *calvados.* Then there is also the very popular summertime drink known as *mazagran,* which in that region means seltzer water and cold coffee, or what Americans might call a coffee highball.

Making coffee in France has been, and always will be, by the drip and the filtration methods. The large hotels and cafés follow these methods almost entirely, and so does the housewife. When company comes, and something unusual in coffee is to be served, Mr. Beeson says he has known the cook to drip the coffee, using a spoonful of hot water at a time, pouring it over tightly packed, finely ground coffee, allowing the water to percolate through to extract every particle of oil. They use more ground coffee in bulk than they get liquid in the cup, and sometimes spend an hour producing four or five demi-tasses. It is needless to say that it is more like molasses than coffee when ready for drinking.

It is not unusual in some parts of France to save the coffee grounds for a second or even a third infusion, but this is not considered good practise.

Von Liebig's idea of correct coffee making has been adapted to French practise in some instances after this fashion: put used coffee grounds in the bottom chamber of a drip coffee pot. Put freshly ground coffee in the upper chamber. Pour on boiling water. The theory is that the old coffee furnishes body and strength, and the fresh coffee the aroma.

The cafés that line the boulevards of Paris and the larger cities of France all serve coffee, either plain or with milk, and almost always with liqueur. The coffee house in France may be said to be the wine house; or the wine house may be said to be the coffee house. They are inseparable. In the smallest or the largest of these establishments coffee can be had at any time of day or night. The proprietor of a very large café in Paris says his coffee sales during the day almost equal his wine sales.

The French, young or old, take a great deal of pleasure in sitting out on the sidewalk in front of a café, sipping coffee or liqueur. Here they love to idle away the time just watching the passing show.

In Paris, there are hundreds of these cafés lining the boulevards, where one may sit for hours before the small tables reading the newspapers, writing letters, or merely idling. In the morning, from eight to eleven, employees, men-about-town, tourists, and provincials throng the cafés for *café au lait*. The waiters are coldly polite. They bring the papers, and brush the table — twice for *café crème* (milk), and three times for *café complet* (with bread and butter).

In the afternoon, *café* means a small cup or glass of *café noir*, or *café nature*. It is double the usual amount of coffee dripped by percolator or filtration device, the process consuming eight to ten minutes. Some understand *café noir* to mean equal parts of coffee and brandy with sugar and vanilla to taste. When *café noir* is mixed with an equal quantity of cognac alone it becomes *café gloria*. *Café mazagran* is also much in demand in the summertime. The coffee base is made as for *café noir*, and it is served in a tall glass with water to dilute it to one's taste.

Few of the cafés that made Paris famous in the eighteenth century survive. Among those that are notable for their coffee service are the Café de la Paix; the Café de

ONE OF THE BIARD CAFES

There are about 200 of these coffee and wine shops in Paris. They are frequented mostly by laborers, clerks, and midinettes

RESTAURANT PROCOPE, 1922
Successor to the famous "Cave" of 1689

la Régence, founded in 1718; and the Café Prévost, noted also for chocolate after the theater.

GERMANY. Germany originated the afternoon coffee function known as the kaffee-klatsch. Even today, the German family's reunion takes place around the coffee table on Sunday afternoons. In summer, when weather permits, the family will take a walk into the suburbs, and stop at a garden where coffee is sold in pots. The proprietor furnishes the coffee, the cups, the spoons and, in normal times, the sugar, two pieces to each cup; and the patrons bring their own cake. They put one piece of sugar into each cup and take the other pieces home to the "canary bird," meaning the sugar bowl in the pantry.

Cheaper coffee is served in some gardens, which conspicuously display large signs at the entrance, saying: "Families may cook their own coffee in this place." In such a garden, the patron merely buys the hot water from the proprietor, furnishing the ground coffee and cake himself.

While waiting for the coffee to brew, he may listen to the band and watch the children play under the trees. French or Vienna drip pots are used for brewing.

Every city in Germany has its cafés, spacious places where patrons sit around small tables, drinking coffee, "with or without" turned or unturned, steaming or iced, sweetened or unsweetened, depending on the sugar supply; nibble, at the same time, a piece of cake or pastry, selected from a glass pyramid; talk, flirt, malign, yawn, read, and smoke. Cafés are, in fact,

public reading rooms. Some places keep hundreds of daily and weekly newspapers and magazines on file for the use of patrons. If the customer buys only one cup of coffee, he may keep his seat for hours, and read one newspaper after another.

Three of the four corners of Berlin's most important street crossing are occupied by cafés. This is where Unter den Linden and Friedrichstrasse meet. On the southwest corner there is Kranzler's staid old café, a very respectable place, where the lower hall is even reserved for non-smokers. On the southeast corner is Café Bauer, known the world over. However, it has seen better days. It has been outdistanced by competitors. On the northeast corner is the Victoria, a new-style place, very bright, and less staid. There no room is reserved for non-smokers, for most of the ladies, if they do not themselves smoke, will light the cigars for their escorts.

Around the Potsdamer Platz there is a number of cafés. Josty's is perhaps the most frequented in Berlin. It is the best liked on account of the trees and terraces in front. Farther to the west, on Kuerfuerstendamm, there are dozens of large cafés.

MORNING COFFEE IN FRONT OF A BOULEVARD CAFE, PARIS, WITH A BRITISH BACKGROUND

INTERIOR, CAFE BAUER, BERLIN

Some of the cafés are meeting-places for certain professions and trades. The Admiral's café, in Friedrichstrasse, for instance, is the "artistes'" exchange. All the stage folk and stars of the tanbark meet there every day. Chorus girls, tumblers, ladies of the flying trapeze, contortionists, and bareback riders are to be found there, discussing their grievances, denouncing their managers, swapping their diamonds, and recounting former triumphs. Cinema-makers come also to pick out a cast for a new film play. There one can pick out a full cast every minute.

Then there is the Café des Westens in Kuerfuerstendamm, the old one, where dreamers and poets congregate. It is called also Café Groessenwahn, which means that persons suffering from an exaggerated ego are conspicuous by their presence and their long hair.

At almost every table one may find a poet who has written a play that is bound to enrich its author and any man of means who will put up the money to build a new theater in which to produce it.

Saxony and Thuringia are proverbial hotbeds of coffee lovers. It is said that in Saxony there are more coffee drinkers to the square inch and more cups to the single coffee bean than anywhere else upon earth. The Saxons like their coffee, but seem to be afraid it may be too strong for them. So, when over their cups, they always make certain they can see bottom before raising the steaming bowl to the lip.

Von Liebig's method of making coffee, whereby three-fourths of the quantity to be used is first boiled for ten or fifteen minutes, and the remainder added for a six-minute steeping or infusion, is religiously followed by some housekeepers.

CAFE BAUER, UNTER DEN LINDEN, BERLIN

Von Liebig advocated coating the bean with sugar. In some families, fats, eggs, and egg-shells are used to settle and to clarify the beverage.

Coffee in Germany is better cooked (roasted) and more scientifically prepared than in many other European countries. In recent years, during the World War and since, however, there has been an amazing increase in the use of coffee substitutes, so that the German cup of coffee is not the pure delight it was once.

GREECE. Coffee is the most popular and most extensively used non-alcoholic beverage in Greece, as it is throughout the Near East. Its annual per capita consumption there is about two pounds, two-thirds of the supply coming *via* Austria and France, Brazil furnishing direct the bulk of the remaining third.

Coffee is given a high or city roast, and is used almost entirely in powdered form. It is prepared for consumption principally in the Turkish demi-tasse way. Finely ground coffee is used even in making ordinary table, or breakfast, coffee. In private houses the cylindrical brass hand-grinders, manufactured in Constantinople, are mostly used. In many of the coffee houses in the villages and country towns throughout Greece and the Levant, a heavy iron pestle, wielded by a strong man, is employed to pulverize the grains in a heavy stone or marble mortar; while the poorer homes use a small brass pestle and mortar, also manufactured in Turkey.

In his *The Greeks of the Present Day*[6], Edmond François Valentin About says:

The coffee which is drunk in all the Greek houses rather astonishes the travellers who have neither seen Turkey nor Algeria. One is surprised at finding food in a cup in which one expected drink. Yet you get accustomed to this coffee-broth and end by finding it more savoury, lighter, more perfumed, and especially more wholesome, than the extract of coffee you drink in France.

Then About gives the recipe of his servant Petros, who is "the first man in Athens for coffee":

The grain is roasted without burning it; it is reduced to an impalpable powder, either in a mortar or in a very close-grained mill. Water is set on the fire till it boils up; it is taken off to throw in a spoonful of coffee, and a spoonful of pounded sugar for each cup it is intended to make; it is carefully mixed; the coffee pot is replaced on the fire until the contents seem ready to boil over; it is taken off, and set on again; lastly it is quickly poured into the cups. Some coffee drinkers have this preparation boiled as many as five times. Petros makes a rule of not putting his coffee more than three times on the fire. He takes care in filling the cups to divide impartially the coloured froth which rises above the coffee pot; it is the *kaimaki* of the coffee. A cup without *kaimaki* is disgraced.

When the coffee is poured out you are at liberty to drink it boiling and muddy, or cold and clear. Real amateurs drink it without waiting. Those who allow the sediment to settle down, do not do so from contempt, for they afterwards collect it with the little finger and eat it carefully.

Thus prepared, coffee may be taken without inconvenience ten times a day: five cups of French coffee could not be drunk with impunity every day. It is because the coffee of the Turks and the Greeks is a diluted tonic, and ours is a concentrated tonic.

I have met at Paris many people who took their coffee without sugar, to imitate the Orientals. I think I ought to give them notice, between ourselves, that in the great coffee-houses of Athens, sugar is always presented with the coffee; in the khans and second-rate coffee-houses, it is served already sugared; and that at Smyrna and Constantinople, it has everywhere been brought to me sugared.

KRANZLER'S, UNTER DEN LINDEN, BERLIN

[6] New York. 1857 (p. 276).

ITALY. In Italy coffee is roasted in a wholesale and retail way as well as in the home. French, German, Dutch, and Italian machines are used. The full city, or Italian, roast is favored. There are cafés as in France and other continental countries, and the drink is prepared in the French fashion. For restaurants and hotels, rapid filtering machines, first developed by the French and Italians, are used. In the homes, percolators and filtration devices are employed.

The De Mattia Brothers have a process designed to conserve the aroma in roasting. The Italians pay particular attention to the temperature in roasting and in the cooling operation. There is considerable glazing, and many coffee additions are used.

Like the French, the Italians make much of *café au lait* for breakfast. At dinner, the *café noir* is served.

Cafés of the French school are to be found along the Corso in Rome, the Toledo in Naples, in the Galleria Vittorio Emanuel and the Piazza del Duomo in Milan, and in the arcades surrounding the Piazza de San Marco in Venice, where Florian's still flourishes.

NETHERLANDS. In the Netherlands, too, the French café is a delightful feature of the life of the larger cities. The Dutch roast coffee properly, and make it well. The service is in individual pots, or in demi-tasses on a silver, nickle, or brass tray, and accompanied by a miniature pitcher containing just enough cream (usually whipped), a small dish about the size of an individual butter plate holding three squares of sugar, and a slender glass of water. This service is universal; the glass of water always goes with the coffee. It is the one sure way for Americans to get a drink of water. It is the custom in Holland to repair to some open-air café or indoor coffee house for the after-dinner cup of coffee. One seldom takes his coffee in the place where he has his dinner. These cafés are many, and some are elaborately designed and furnished. One of the most interesting is the St. Joris at the Hague, furnished in the old Dutch style. The approved way of making coffee in Holland is the French drip method.

NORWAY AND SWEDEN. French and German influences mark the roasting, grinding, preparing, and serving of coffee in Norway and Sweden. Generally speaking, not so much chicory is used, and a great deal of whipped cream is employed. In Norway, the boiling method has many followers. A big (open) copper kettle is used. This is filled with water, and the coffee is dumped in and boiled. In the poorer-class country homes, the copper kettle is brought to the table and set upon a wooden plate. The coffee is served directly from the kettle in cups. In better-class homes, the coffee is poured from the kettle into silver coffee pots in the kitchen, and the silver coffee pots are brought to the table. The only thing approaching coffee houses are the "coffee rooms" which are to be found in Christiania. These are small one-room affairs in which the plainer sorts of foods, such as porridge, may be purchased with the coffee. They are cheap, and are largely frequented by the poorer class of students, who use them as places in which to study while they drink their coffee.

In RUSSIA and SWITZERLAND, French and German methods obtain. Russia, however, drinks more tea than coffee, which by the masses is prepared in Turkish fashion, when obtainable. Usually, the coffee is only a cheap "substitute." The so-called *café à la Russe* of the aristocracy, is strong black coffee flavored with lemon. Another Russian recipe calls for the coffee to be placed in a large punch bowl, and covered with a layer of finely chopped apples and pears; then cognac is poured over the mass, and a match applied.

ROUMANIA and SERVIA drink coffee prepared after either the Turkish or the French style, depending on the class of the drinker and where it is served. Substitutes are numerous.

In SPAIN and PORTUGAL the French type of café flourishes as in Italy. In Madrid, some delightful cafés are to be found around the Puerto del Sol, where coffee and chocolate are the favorite drinks. The coffee is made by the drip process, and is served in French fashion.

Coffee Manners and Customs in North America

The introduction of coffee and tea into North America effected a great change in the meal-time beverages of the people. Malt beverages had been succeeded by alcoholic spirits and by cider. These in turn were supplanted by tea and coffee.

CANADA. In Canada, we find both French and English influences at work in the preparation and serving of the bever-

age; "Yankee" ideas also have entered from across the border. Some years back (about 1910) A. McGill, chief chemist of the Canadian Inland Revenue Department, suggested an improvement upon Baron von Liebig's method, whereby Canadians might obtain an ideal cup of coffee. It was to combine two well-known methods. One was to boil a quantity of ground coffee to get a maximum of body or. soluble matter. The other was to percolate a similar quantity to get the needed caffeol. By combining the decoction and the infusion, a finished beverage rich in body and aroma might be had. Most Canadians continue to drink tea, however, although coffee consumption is increasing.

MEXICO. In Mexico, the natives have a custom peculiarly their own. The roasted beans are pounded to a powder in a cloth bag which is then immersed in a pot of boiling water and milk. The *vaquero,* however, pours boiling water on the powdered coffee in his drinking cup, and sweetens it with a brown sugar stick.

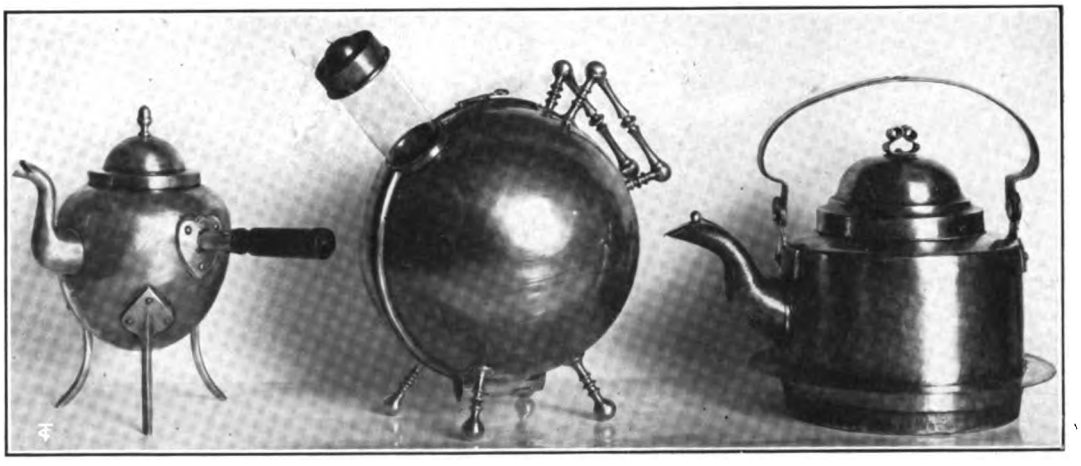
Among the upper classes in Mexico the following interesting method obtains for making coffee:

Roast one pound until the beans are brown inside. Mix with the roasted coffee one teaspoonful of butter, one of sugar, and a little brandy. Cover with a thick cloth. Cool for one hour; then grind. Boil one quart of water. When boiling, put in the coffee and remove from fire immediately. Let it stand a few hours, and strain through a flannel bag, and keep in a stone jar until required for use; then heat quantity required.

SIDEWALK CAFE, LISBON

UNITED STATES. In no country has there been so marked an improvement in coffee making as in the United States. Although in many parts, the national beverage is still indifferently prepared, the progress made in recent years has been so great that the friends of coffee are hopeful that before long it may be said truly that coffee making in America is a national honor and no longer the national disgrace that it was in the past.

Already, in the more progressive homes, and in the best hotels and restaurants, the coffee is uniformly good, and the service all that it should be. The American breakfast cup is a food-beverage because of the additions of milk or cream and sugar; and unlike Europe, this same generous cup serves again as a necessary part



THESE COFFEE POTS ARE WIDELY USED IN SWEDEN FOR BOILING COFFEE

Left, copper pot with wooden handle and iron legs designed to stand in the coals — Center, glass-globe pot, for stove use, enclosed in felt-lined brass cosey — Right, hand-made hammered-brass kettle for stove use

THE COFFEE ROOM OF THE HOTEL ADOLPHUS, DALLAS, TEXAS

DAY-AND-NIGHT COFFEE ROOM, RICE HOTEL, HOUSTON, TEXAS

HOTEL BARS REPLACED BY COFFEE ROOMS IN THE UNITED STATES

One effect of prohibition has been to lead many hotels to feature their coffee service, bringing back the modern type of coffee room illustrated above

of the noonday and evening meals for most people.

The important and indispensable part that sugar plays in the make-up of the American cup of coffee was ably set forth by Fred Mason,[1] vice-president of the American Sugar Refining Co., when he said:

> The coffee cup and the sugar bowl are inseparable table companions. Most of us did not realize this until the war came, with its attendant restrictions on everything we did, and we found that the sugar bowl had disappeared from all public eating places. No longer could we make an unlimited number of trips to the sugar bowl to sweeten our coffee; but we had to be content with what was doled out to us with scrupulous care — a quantity so small at times that it gave only a hint of sweetness to our national beverage.
>
> Then it was that we really appreciated how indispensable the proper amount of sugar was to a good, savory cup of coffee, and we missed it as much as we would seasoning from certain cooked foods. Secretly we consoled ourselves with the promise that if the day ever came when sugar bowls made their appearance once more, filled temptingly with the sweet granules that were "gone but not forgotten," we should put an extra lump or an additional spoonful of sugar into our coffee to help us forget the joyless war days.
>
> Since sugar is so necessary to our enjoyment of this popular beverage, it is obvious that a considerable part of all the sugar we consume must find its way into the national coffee cup. The stupendous amount of 40,000,000,000 cups of coffee is consumed in this country each year. Taking two teaspoonfuls or two lumps as a fair average per cup, we find that about 800,000,000 pounds of sugar, almost one-tenth of our total annual consumption, are required to sweeten Uncle Sam's coffee cup. This is specially significant when one considers that, with the single exception of Australia, the United States consumes more sugar per capita than any country on earth.
>
> Sugar adds high food value to the stimulative virtues of coffee. The beverage itself stimulates the mental and physical powers, while the sugar it contains is fuel for the body and furnishes it with energy. Sugar is such a concentrated food that the amount used by the average person in two cups of coffee is enough to furnish the system with more energy than could be derived from 40 oysters on the half-shell.

Since prohibition, the average citizen is drinking one hundred more cups of coffee a year than he did in the old days; and a good part of the increase is attributed to newly formed habits of drinking coffee between meals, at soda fountains, in tea and coffee shops, at hotels, and even in the homes. In other words, the increase is due to coffee drinking that directly takes the place of malt and spirituous liquors. There have come into being the hotel coffee room; the custom of afternoon coffee drinking; and free coffee-service in many factories, stores, and offices.

In colonial days, must or ale first gave way to tea, and then to coffee as a breakfast beverage. The Boston "tea party" clinched the case for coffee; but in the meantime, coffee was more or less of an after-dinner function, or a between-meals drink, as in Europe. In Washington's time, dinner was usually served at three o'clock in the afternoon, and at informal dinner parties the company "sat till sunset — then coffee."

In the early part of the nineteenth century, coffee became firmly intrenched as the one great American breakfast beverage; and its security in this position would seem to be unassailable for all time.

Today, all classes in the United States begin and end the day with coffee. In the home, it is prepared by boiling, infusion or steeping, percolation, and filtration; in the hotels and restaurants, by infusion, percolation, and filtration. The best practise favors true percolation (French drip), or filtration.

Steeping coffee in American homes (an English heirloom) is usually performed in a china or earthenware jug. The ground coffee has boiling water poured upon it until the jug is half full. The infusion is stirred briskly. Next, the jug is filled by pouring in the remainder of the boiling water, the infusion is again stirred, then permitted to settle, and finally is poured through a strainer or filter cloth before serving.

When a pumping percolator or a double glass filtration device is used, the water may be cold or boiling at the beginning as the maker prefers. Some wet the coffee with cold water before starting the brewing process.

For genuine percolator, or drip coffee, French and Austrian china drip pots are mostly employed. The latest filtration devices are described in chapter XXXIV.

The Creole, or French market, coffee for which New Orleans has long been famous is made from a concentrated coffee extract prepared in a drip pot. First, the ground coffee has poured over it sufficient boiling water thoroughly to dampen it, after which further additions of boiling water, a tablespoonful at a time, are poured upon it at

[1] "The Coffee Cup and the Sugar Bowl." *Tea and Coffee Trade Jour.*, 1921 (vol. xli: no. 6: p. 809).

five minute intervals. The resulting extract is kept in a tightly corked bottle for making *café au lait* or *café noir* as required. A variant of the Creole method is to brown three tablespoonfuls of sugar in a pan, to add a cup of water, and to allow it to simmer until the sugar is dissolved; to pour this liquid over ground coffee in a drip pot, to add boiling water as required, and to serve black or with cream or hot milk, as desired.

In New Orleans, coffee is often served at the bedside upon waking, as a kind of early breakfast function.

The Philadelphia Centennial Exposition of 1876 served to introduce the Vienna café to America. Fleischmann's Vienna Café and Bakery was a feature of our first international exposition. Afterward, it was transferred to Broadway, New York, where for many years it continued to serve excellent coffee in Vienna style next door to Grace Church.

The opportunity is still waiting for the courageous soul who will bring back to our larger cities this Vienna café or some Americanized form of the continental or sidewalk café, making a specialty of tea, coffee, and chocolate.

The old Astor House was famous for its coffee for many years, as was also Dorlon's from 1840 to 1922.

Members of the family of the late Colonel Roosevelt began to promote a Brazil coffee-house enterprise in New York in 1919. It was first called Café Paulista, but it is now known as the Double R coffee house, or Club of South America, with a Brazil branch in the 40's and an Argentine branch on Lexington Avenue. Coffee is made and served in Brazilian style; that is, full city roast, pulverized grind, filtration made; service, black or with hot milk. Sandwiches, cakes, and crullers are also to be had.

One of New York's newest clubs is known as the Coffee House. It is in West Forty-fifth Street, and has been in existence since December, 1915, when it was opened with an informal dinner, at which the late Joseph H. Choate, one of the original members, outlined the purpose and policies of the club.

The founders of the Coffee House were convinced — as the result of the high dues and constantly increasing formality and discipline in the social clubs in New York — that there was need here for a moderate-priced eating and meeting place, which should be run in the simplest possible way and with the least possible expense.

At the beginning of its career, the club framed, adopted, and has since lived up to, a most informal constitution: "No officers, no liveries, no tips, no set speeches, no charge accounts, no RULES."

The membership is made up, for the most part, of painters, writers, sculptors, architects, actors, and members of other professions. Members are expected to pay cash for all orders. There are no proposals of candidates for membership. The club invites to join it those whom it believes to be in sympathy with the ideals of its founders.

The method of preparing coffee for individual service in the Waldorf-Astoria, New York, which has been adopted by many first-class hotels and restaurants that do not serve urn-made coffee exclusively, is the French drip plus careful attention to all the contributing factors for making coffee in perfection, and is thus described by the hotel's steward:

A French china drip coffee pot is used. It is kept in a warm heater; and when the coffee is ordered, this pot is scalded with hot water. A level tablespoonful of coffee, ground to about the consistency of granulated sugar, is put into the upper and percolator part of the coffee pot. Fresh boiling water is then poured through the coffee and allowed to percolate into the lower part of the pot. The secret of success, according to our experience, lies in having the coffee freshly ground, and the water as near the boil-

BRITANNIA COFFEE POT FROM WHICH ABRAHAM LINCOLN WAS OFTEN SERVED IN NEW SALEM

Its story is told on page 614

COFFEE SERVICE, HOTEL ASTOR, NEW YORK

ing point as possible, all during the process. For this reason, the coffee pot should be placed on a gas stove or range. The quantity of coffee can be varied to suit individual taste. We use about ten percent more ground coffee for after dinner cups than we do for breakfast. Our coffee is a mixture of Old Government Java and Bogota.

C. Scotty, chef at the Hotel Ambassador, New York, thus describes the method of making coffee in that hostelry:

In the first place, it is essential that the coffee be of the finest quality obtainable; secondly, better results are obtained by using the French filterer, or coffee bag.

Twelve ounces of coffee to one gallon of water for breakfast.

Sixteen ounces of coffee to one gallon of water for dinner.

Boiling water should be poured over the coffee, sifoned, and put back several times. We do not allow the coffee grounds to remain in the urn for more than fifteen to twenty minutes at any time.

The coffee service at the best hotels is usually in silver pots and pitchers, and includes the freshly made coffee, hot milk or cream (sometimes both), and domino sugar.

Within the last year (1921) many of the leading hotels, and some of the big railway systems, have adopted the custom of serving free a demi-tasse of coffee as soon as the guest-traveler seats himself at the breakfast table or in the dining car. "Small blacks," the waiters call them, or "coffee cocktails," according to their fancy.

At the Pequot coffee house, 91 Water Street, New York, a noon-day restaurant in the heart of the coffee trade, an attempt has been made to introduce something of the old-time coffee house atmosphere.

The Childs chain of restaurants recently began printing on its menus, in brackets before each item, the number of calories as computed by an expert in nutrition. Coffee with a mixture of milk and cream is credited with eighty-five calories, a well known coffee substitute with seventy calories, and tea with eighteen calories. The Childs chain of 92 restaurants serves 40,000,000 cups of coffee a year, made from 375 tons of ground coffee, and figuring an average of 53 cups to the pound.

The Thompson chain of one hundred restaurants serves 160,000 cups of coffee per day, or more than 58,000,000 cups per year.

Coffee Customs in South America

ARGENTINE. Coffee is very popular as a beverage in Argentina. *Café con leche* — coffee with milk, in which the proportion of coffee may vary from one-fourth to two-thirds — is the usual Argentine breakfast beverage. A small cup of coffee is generally taken after meals, and it is also consumed to a considerable extent in cafés.

BRAZIL. In Brazil every one drinks coffee and at all hours. Cafés making a specialty of the beverage, and modeled after continental originals, are to be found a-plenty in Rio de Janeiro, Santos, and other large cities. The custom prevails of roasting the beans high, almost to carbonization, grinding them fine, and then boiling after the Turkish fashion, percolating in French drip pots, steeping in cold water for several hours, straining and heating the liquid for use as needed, or filtering by means of conical linen sacks suspended from wire rings.

The Brazilian loves to frequent the cafés and to sip his coffee at his ease. He is very continental in this respect. The wide-open doors, and the round-topped marble tables, with their small cups and saucers set around a sugar basin, make inviting pictures. The customer pulls toward him one of the cups and immediately a waiter comes and fills it with coffee, the charge for which is about three cents. It is a common thing for a Brazilian to consume one dozen to two dozen cups of black coffee a day. If one pays a social visit, calls upon the president of the Republic, or any lesser official, or on a business acquaintance, it is a signal for an attendant to serve coffee. *Café au lait* is popular in the morning; but except for this service, milk or cream is never used. In Brazil, as in the Orient, coffee is a symbol of hospitality.

In CHILE, PARAGUAY and URUGUAY, very much the same customs prevail of making and serving the beverage.

Coffee Drinking in Other Countries

In AUSTRALIA and NEW ZEALAND, English methods for roasting, grinding, and making coffee are standard. The beverage usually contains thirty to forty percent chicory. In the bush, the water is boiled in a billy can. Then the powdered coffee is added; and when the liquid comes again to a boil, the coffee is done. In the cities, practically the same method is followed. The general rule in the antipodes seems to be to "let it come to a boil", and then to remove it from the fire.

In CUBA the custom is to grind the coffee fine, to put it in a flannel sack suspended over a receiving vessel, and to pour cold water on it. This is repeated many times, until the coffee mass is well saturated. The first drippings are repoured over the bag. The final result is a highly concentrated extract, which serves for making *café au lait*, or *café noir*, as desired.

In MARTINIQUE, coffee is made after the French fashion. In PANAMA, French and American methods obtain; as also in the PHILIPPINES.

CHAPTER XXXVI

PREPARATION OF THE UNIVERSAL BEVERAGE

The evolution of grinding and brewing methods — Coffee was first a food, then a wine, a medicine, a devotional refreshment, a confection, and finally a beverage — Brewing by boiling, infusion, percolation, and filtration — Coffee making in Europe in the nineteenth century — Early coffee making in the United States — Latest developments in better coffee making — Various aspects of scientific coffee brewing — Advice to coffee lovers on how to buy coffee, and how to make it in perfection

THE coffee drink has had a curious evolution. It began, not as a drink, but as a food ration. Its first use as a drink was as a kind of wine. Civilization knew it first as a medicine. At one stage of its development, before it became generally accepted as a liquid refreshment, the berries found favor as a confection. As a beverage, its use probably dates back about six hundred years.

The protein and fat content, that is, the food value, of coffee, so far as civilized man is concerned, is an absolute waste. The only constituents that are of value are those that are water soluble, and can be extracted readily with hot water. When coffee is properly made, as by the drip method, either by percolation or filtration, the ground coffee comes in contact with the hot water for only a few minutes; so the major portion of the protein, which is not only practically insoluble, but coagulates on heating, remains in the unused part of the coffee, the grounds. The coffee bean contains a large percent of protein — fourteen percent. By comparing this figure with twenty-one percent of protein in peas, twenty-three percent in lentils, twenty-six percent in beans, twenty-four percent in peanuts, about eleven percent in wheat flour, and less than nine percent in white bread, we learn how much of this valuable food stuff is lost with the coffee grounds[1].

Though civilized man (excepting the inhabitants of the Isle de Groix off the coast of Brittany) does not use this protein content of coffee, in certain parts of Africa it has been put to use in a very ingenious and effective manner "from time immemorial" down to the present day. James Bruce, the Scottish explorer, in his travels to discover the source of the Nile in 1768-73, found that this curious use of the coffee bean had been known for centuries. He brought back accounts and specimens of its use as a food in the shape of balls made of grease mixed with roasted coffee finely ground between stones.

Other writers have told how the Galla, a wandering tribe of Africa — and like most wandering tribes, a warlike one — find it necessary to carry concentrated food on their long marches. Before starting on their marauding excursions, each warrior equips himself with a number of food balls. These prototypes of the modern food tablet are about the size of a billiard ball, and consist of pulverized coffee held in shape with fat. One ball constitutes a day's ration; and although civilized man might find it unpalatable, from the purely phys-

[1] Frankel, F. Hulton, Ph.D. *Tea and Coffee Trade Jour.*, 1917 (vol. xxxii: p. 142).

iological standpoint it is not only a concentrated and efficient food, but it also has the additional advantage of containing a valuable stimulant in the caffein content which spurs the warrior on to maximum effort. And so the savage in the African jungle has apparently solved two problems; the utilization of coffee's protein, and the production of a concentrated food.

Further research shows that perhaps as early as 800 A.D. this practise started by crushing the whole ripe berries, beans and hulls, in mortars, mixing them with fats, and rounding them into food balls. Later, the dried berries were so used. The inhabitants of Groix, also, thrive on a diet that includes roasted coffee beans.

About 900, a kind of aromatic wine was made in Africa from the fermented juice of the hulls and pulp of the ripe berries[2].

Payen says that the first coffee drinkers did not think of roasting but, impressed by the aroma of the dried beans, they put them in cold water and drank the liquor saturated with their aromatic principles. Crushing the raw beans and hulls, and steeping them in water, was a later improvement.

It appears that boiled coffee (the name is anathema to-day) was invented about the year 1000 A.D. Even then, the beans were not roasted. We read of their use in medicine in the form of a decoction. The dried fruit, beans and hulls, were boiled in stone or clay cauldrons. The custom of using the sun-dried hulls, without roasting, still exists in Africa, Arabia, and parts of southern Asia. The natives of Sumatra neglect the fruit of the coffee tree and use the leaves to make a tea-like infusion. Jardin relates that in Guiana an agreeable tea is made by drying the young buds of the coffee tree, and rolling them on a copper plate slightly heated. In Uganda, the natives eat the raw berries; from bananas and coffee they make also a sweet, savory drink which is called *menghai*.

About 1200, the practise was common of making a decoction from the dried hulls alone. There followed the discovery that roasting improved the flavor. Even today, this drink known as Sultan or Sultana coffee, *café à la sultane*, or *kisher*, continues in favor in Arabia. Credit for the invention of this beverage has been wrongfully given by various French writers to Doctor

[2] See chapter III.

EARLY COFFEE MAKING IN PERSIA
Showing leather bag for green beans, roasting plate, grinder, boiler, and serving cups

Andry, director of the Faculty of Medicine in Paris. Dr. Andry had his own recipe for making *café à la sultane*, which was to boil the coffee hulls for half an hour. This gave a lemon-colored liquid which was drunk with a little sugar.

The Oriental procedure was to toast the hulls in an earthenware pot over a charcoal fire, mixing in with them a small quantity of the silver skins, and turning them over until they were slightly parched. The hulls and silver skins, in proportions of four to one, were then thrown into boiling water and well boiled again for at least a half-hour. The color of the drink had some resemblance to the best English beer, La Roque assures us, and it required no sweetening, "there being no bitterness to correct." This was still the coffee drink of the court of Yemen, and of people of distinction in the Levant, when La Roque and his fellow-travelers made their celebrated voyage to Arabia the Happy in 1711-13.

Some time in the thirteenth century, the practise began of roasting the dried beans, after the hulling process. This was done first in crude stone and earthenware trays, and later on metal plates, as described in chapter XXXIV. A liquor was made from boiling the whole roasted beans. The next

step was to pound the roasted beans to a powder with a mortar and pestle; and the decoction was then made by throwing the powder into boiling water, the drink being swallowed in its entirety, grounds and all. It was a decoction for the next four centuries.

When the long-handled Arabian metal boiler made its appearance in the early part of the sixteenth century, the method of preparation and service had much improved. The Arabs and the Turks had made it a social adjunct, and its use was no longer confined to the physicians and the churchmen. It had become a stimulating refreshment for all the people; and at the same time, the Arabians and the Turks had developed a coffee ceremony for the higher classes which was quite as wonderful as the tea ceremony of Japan.

The common early method of preparation throughout the Levant was to steep the powder in water for a day, to boil the liquor half away, to strain it, and to keep it in earthen pots for use as wanted. In the sixteenth century, the small coffee boiler, or *ibrik*, caused the practise to be more of an instantaneous affair. The coffee was ground, and the powder was dropped into the boiling water, to be withdrawn from the fire several times as it boiled up to the rim. While still boiling, cinnamon and cloves were sometimes added before pouring the liquid off into the findjans, or little china cups, to be served with the addition of a drop of essence of amber. Later, the Turks added sugar during the boiling process.

From the first simple uncovered *ibrik* there was developed, about the middle of the seventeenth century, a larger-size covered coffee boiler, the forerunner of the modern combination brewing and serving pot. This was a copper-plated kettle patterned after the oriental ewer with a broad base, bulbous body, and narrow neck. After having poured into it one and a half times as much water as the dish (cup) in which the drink was to be served would hold, the pot was placed on a lively fire. When the water boiled, the powdered coffee was tossed into the pot; and, as the liquid boiled up, it was taken from the fire and returned, probably a dozen times. Then the pot was placed in hot ashes to permit the grounds to settle. This done, the drink was served. Dufour, describing this process as practised in Turkey and Arabia, says:

> One ought not to drink coffee, but suck it in as hot as one can. In order not to be burned, it is not necessary to place the tongue in the cup but hold the edge against the tongue with the lips above and below it, forcing it so little that the edges do not bear down, and then suck in; that is to say, swallow it sip by sip. If one is so delicate he can not stand the bitterness, he can temper it with sugar. It is a mistake to stir the coffee in the pot, the grounds being worth nothing. In the Levant it is only the scum of the people who swallow the grounds.

La Roque says:

> The Arabians, when they take their coffee off the fire, immediately wrap the vessel in a wet cloth which fines the liquor instantly, makes it cream at the top and occasion a more pungent steam, which they take great pleasure in snuffing up as the coffee is pouring into the cups. They, like all other nations of the East, drink their coffee without sugar.

Some of the Orientals afterward modified the early coffee-making procedure by pouring the boiling water on the powdered coffee in the serving cups. They thus obtained "a foaming and perfumed beverage," says Jardin, "to which we (the French) could not accustom ourselves because of the powder which remains in suspension. Nevertheless, clarified coffee may be obtained in the Orient. In Mecca, in order to filter it, they strain it through stopples of dried herbs, put into the opening of a jar."

Sugar seems to have been introduced into coffee in Cairo about 1625. Veslingius records that the coffee drinkers in Cairo's three thousand coffee houses "did begin to put sugar in their coffee to correct the bitterness of it", and that "others made sugar plums of the coffee berries". This coffee confection later appeared in Paris, and about the same time (1700) at Montpellier was introduced a coffee water, "a sort of rosa-folis of an agreeable scent that has somewhat of the smell of coffee roasted." These novelties, however, were designed to please only "the most nice lovers of coffee"; for *ennui* and boredom demanded new sensations then as now.

Boiling continued the favorite method of preparing the beverage until well into the eighteenth century. Meanwhile, we learn from English references that it was the custom to buy the beans of apothecaries, to dry them in an oven, or to roast them in an old pudding dish or frying pan before

pounding them to a powder with mortar and pestle, to force the powder through a lawn sieve, and then to boil it with spring water for a quarter of an hour. The following recipe from a rare book published in London, 1662, details the manner of making coffee in the seventeenth century:

COFFEE MAKING IN 1662

To make the drink that is now much used called coffee.

The coffee-berries are to be bought at any Druggist, about three shillings the pound; take what quantity you please, and over a charcoal fire, in an old pudding-pan or frying-pan, keep them always stirring until they be quite black, and when you crack one with your teeth that it is black within as it is without; yet if you exceed, then do you waste the Oyl, which only makes the drink; and if less, then will it not deliver its Oyl, which must make the drink; and if you should continue fire till it be white, it will then make no coffee, but only give you its salt. The Berry prepared as above, beaten and forced through a Lawn Sive, is then fit for use.

Take clean water, and boil one-third of it away what quantity soever it be, and it is fit for use. Take one quart of this prepared Water, put in it one ounce of your prepared coffee, and boil it gently one-quarter of an hour, and it is fit for your use; drink one-quarter of a pint as hot as you can sip it.

In England, about this time, the coffee drink was not infrequently mixed with sugar candy, and even with mustard. In the coffee houses, however, it was usually served black, without sugar or milk.

About 1660, Nieuhoff, the Dutch ambassador to China, was the first to make a trial of coffee with milk in imitation of tea with milk. In 1685, Sieur Monin, a celebrated doctor of Grenoble, France, first recommended *café au lait* as a medicine. He prepared it thus: Place on the fire a bowl of milk. When it begins to rise, throw in to it a bowl of powdered coffee, a bowl of moist sugar, and let it boil for some time.

We read that in 1669 "coffee in France was a hot black decoction of muddy grounds thickened with syrup."

Angelo Rambaldi in his *Ambrosia Arabica* thus describes coffee making in Italy and other European countries in 1691:

DESCRIPTION OF THE VASE FOR MAKING THE DECOCTION, DOSE OF POWDER AND OF THE WATER NECESSARY AND TIME OF BOILING IT.

Two such vessels having a large paunch to reach the fire, two others with long necks and narrow, with a cover to restrain their spirituous and volatile particles which when thrown off by the heat are easily lost. These vessels are called Ibriq in Arabia. They are made of copper — coated with white outside and inside. We, who do not possess the art of making them should select an earth vitriate, sulphate of copper, or any other material adapted for kitchen ware: it might even be of silver.

The quantity of water and powder has no certain rule, by reason of the difference of our nature and tastes, and each one after some experience will use his own judgment to adjust it to his desire and liking.

Maronita infused two ounces of powder in three litres of water. Cotovico in his voyage to Jerusalem affirms that he has observed six ounces of the former to 20 litres of the latter, boiled until it was reduced to half the quantity. Thévenot asserts that the Turks in three cups of water are contented with a good spoonful of powder. I have observed however that in Africa, France and England, into about six ounces of water (which with them is one cup) a dram of the powder is infused and this agrees with my taste — but I have wished at times to change the dose.

Others put the water into the vase and when it begins to boil add the powder, but because it is full of spirit at the first contact with the heat it rises and boils over the edge of the vase. Take it away from the fire till the boiling ceases, then put it on the fire again and let it stay a short time boiling with the cover on: Stand it on warm ashes until it settles, after which slowly pour a little of the decoction into an earthen vessel, or one of porcelain or any other kind, as hot as can be borne, and drink a sip; if it pleases your taste, add a portion of cardamom, cloves, nutmeg or cinnamon, and dissolve a little sugar in the water; yet because these substances will alter the taste of this simple, they are not prized by many experts.

Modern Arabia, Bassa, Turkey, the Great Orient, those who are travelling or in the army, infuse the powder in cold water, and then boiling it as directed above, bear witness to its efficacy. All times are opportune to take this salutary drink (beverage). Among the Turks are those who take it even by night, nor is there a business meeting or conversation, where coffee is not taken. Among the Great it would be accounted an incivility, if with smoke, coffee were not offered: and no one in the day is ashamed to frequent the bazaars where it is sold. When I was in London, that city of three million people, there were taverns for its special use. It is a great stimulant. The sober take it to invigorate the stomach. The scrofulous hated it because they thought it stirred up the bile on an empty stomach — but experience proving the contrary enjoy it as much as others.

In 1702, coffee in the American colonies was being used as a refreshment between meals, "like spirituous liquors."

It was in 1711 that the infusion idea in coffee making appeared in France. It came in the form of a fustian (cloth) bag which contained the ground coffee in the coffee maker, and the boiling water was poured over it. This was a decided French

novelty, but it made slow headway in England and America, where some people were still boiling the whole roasted beans and drinking the liquor.

In England, as early as 1722, there arose a conscientious objector to boiled coffee in the person of Humphrey Broadbent, a coffee merchant who wrote a treatise on *the True Way of Preparing and Making Coffee*[3], in which he condemned the "silly" practise of making coffee by "boiling an ounce of the powder in a quart of water," then common in the London coffee houses, and urging the infusion method. He favored the following procedure:

> Put the quantity of powder you intend, into your pot (which should be either of stone, or silver, being much better than tin or copper, which takes from it much of its flavour and goodness) then pour boiling-hot water upon the aforesaid powder, and let it stand to infuse five minutes before the fire. This is an excellent way, and far exceeds the common one of boiling, but whether you prepare it by boiling or this way, it will sometimes remain thick and troubled, after it is made, except you pour in a spoonful or two of cold water, which immediately precipitates the more heavy parts at the bottom, and makes it clear enough for drinking.
>
> Some, make coffee with spring water, but it is not so good as river, or *Thames*-water, because the former makes it hard, and distasteful, and the other makes it smooth and pleasant, lying soft on the stomach. If you have a desire to make good coffee in your families, I cannot conceive how you can put less than two ounces of powder to a quart, or one ounce to a pint of water; some put two ounces and a quarter.

By 1760, the decoction, or boiling, method in France had been generally replaced by the infusion, or steeping, method.

In 1763, Donmartin, a tinsmith of St. Bendit, France, invented a coffee pot, the inside of which was "filled by a fine sack put in in its entirety," and which had a tap to draw the coffee. Many inventions to make coffee *sans ebullition* (without boiling) appeared in France about this time; but it was not until 1800 that De Belloy's pot, employing the original French drip method, appeared, signaling another step forward in coffee making — percolation.

De Belloy and Count Rumford

De Belloy's pot was probably made of iron or tin, afterward of porcelain; and it has served as a model for all the percolation devices that followed it for the next hundred years. It does not seem to have been patented, and not much is known of the inventor. About this period, it was the common practise in England to boil coffee in the good old-fashioned way, and to "fine" (clarify) it with isinglass. This moved Count Rumford (Benjamin Thompson), an American-British scientist, then living in Paris, to make a study of scientific coffee-making, and to produce an improved drip device known as Rumford's percolator. He has been generally credited with the invention of the percolator; but, as pointed out in a previous chapter, this honor seems to be De Belloy's and not Rumford's.

Count Rumford embodied his observations and conclusions in a verbose essay entitled *Of the excellent qualities of coffee and the art of making it in the highest perfection,* published in London in 1812. In this treatise he describes and illustrates the Rumford percolator.

Brillat-Savarin, the famous French gastronomist, who also wrote on coffee in his *VIme Meditation,* said of the De Belloy pot:

> I have tried, in the course of time, all methods and of all those which have been suggested to me up to today (1825) and with a full knowledge of the matter in hand, I prefer the De Belloy method, which consists of pouring the boiling water upon the coffee which has been placed in the vessel of porcelain or silver, pierced with very small holes. I have attempted to make coffee in a boiler at high pressure, but I have had as a result a coffee full of extracts and bitterness which would scrape the throat of a Cossack.

Brillat-Savarin had something also to say on the subject of grinding coffee, his conclusion being that it was "better to pound the coffee than to grind it."

He refers to M. Du Belloy, archbishop of Paris, "who loved good things and was quite an epicure," and says that Napoleon showed him deference and respect. This may have been Jean Baptiste De Belloy, who, according to Didot, was born in 1709 and died in 1808, and, it is thought likely, was the inventor of the De Belloy pot.

Count Rumford was born in Woburn, Mass., in 1753. He was apprenticed to a storekeeper in Salem in 1766. He became an object of distrust among the friends of the cause of American freedom: and, on the evacuation of Boston by the Royal troops in 1776, he was selected by Governor Wentworth of New Hampshire to carry dispatches to England. He left Eng-

[3] Broadbent, Humphrey. *The Domestick Coffee Man,* London, 1722.

land in 1802, and resided in France from 1804 until his death in 1814. In 1772, he had married, or rather, as he put it, he was married by, a wealthy widow, the daughter of a highly respectable minister and one of the first settlers at Rumford, now called Concord, New Hampshire. It was from this town that he took his title of Rumford when he was created a Count of the Holy Roman Empire in 1791. His first wife having died, he married in Paris, the wealthy widow of the celebrated chemist, Lavoisier; and with her he lived an extremely uncomfortable life until they agreed to separate.

In his essay on coffee and coffee making, Count Rumford gives us a good pen picture of the preparation of the beverage in England at the beginning of the nineteenth century. He says:

> Coffee is first roasted in an iron pan, or in a hollow cylinder, made of sheet iron, over a brisk fire; and when, from the colour of the grain, and the peculiar fragrance which it acquires in this process, it is judged to be sufficiently roasted, it is taken from the fire, and suffered to cool. When cold it is pounded in a mortar; or ground in a hand-mill to a coarse powder, and preserved for use.
>
> Formerly, the ground Coffee being put into a coffee-pot, with a sufficient quantity of water, the coffee-pot was put over the fire, and after the water had been made to boil a certain time, the coffee-pot was removed from the fire, and the grounds having had time to settle, or having been fined down with isinglass, the clear liquor was poured off, and immediately served up in cups.

Count Rumford thought it a mistake to agitate the coffee powder in the brewing process, and in this he agreed with De Belloy. His improvement on the latter's pot is described in chapter XXXIV. He was a coffee connoisseur; and as such was one of the first to advocate the use of cream as well as sugar for making an ideal cup of the beverage. He refers, though not by name, to De Belloy's percolation method and says, "Its usefulness is now universally acknowledged."

A Few Definitions

Just here, in order to assure a better understanding of the subject, it may be well to clear up sundry misconceptions regarding the words percolation, filtration, decoction, infusion, etc., by the simple expedient of definition.

A decoction is a liquid produced by boiling a substance until its soluble properties are extracted. Thus the coffee drink was first a decoction; and a decoction is what one gets today when coffee is boiled in the good old-fashioned way — as "mother used to make it."

Infusion is the process of steeping — extraction without boiling. It is extraction accomplished at any temperature below boiling, and is a general classification of procedure capable of sub-division. As generally and correctly applied, it is the operation wherein hot water is merely poured upon ground coffee loose in a pot, or in a container resting on the bottom of the pot. In the strictest sense of the term, an infusion is also produced by percolation and filtration, when the water is not boiled in contact with the coffee.

Percolation means dripping through fine apertures in china or metal as in De Belloy's French drip pot.

Filtration means dripping through a porous substance, usually cloth or paper.

Percolation and filtration are practically synonymous, although a shade of distinction in their meaning has arisen so that often the latter is considered as a step logically succeeding the former. Accomplishing extraction of a material by permitting a liquid to pass slowly through it is in fact percolation, whereas filtration of the resultant extract is effected by interposing in its path some medium which will remove solid or semi-solid material from it. Coffee-making practise has in itself so applied these terms that each is considered a complete process. Percolation is thus applied when the infusion is removed from the grounds immediately by dripping through fine perforations in the china or metal of which the device is constructed.

True percolation is not produced in the pumping "percolators" in which the heated water is elevated and sprayed over the ground coffee held in a metal basket in the upper part of the pot, the liquor being recirculated until a satisfactory degree of extraction has been reached. Rather, the process is midway between decoction and infusion, for the weak liquor is boiled during the operation in order to furnish sufficient steam to cause the pumping action.

Filtration is accomplished when the ground coffee is retained by cloth or paper, generally supported by some portion of the brewing device, and extraction effected by pouring water on the top of the mass, permitting the liquid to percolate through, the filtering medium retaining the grounds.

Patents and Devices

From the beginning, the French devoted more attention than any other people to coffee brewing. The first French patent on a coffee maker was granted in 1802 to Denobe, Henrion, and Rauch for "a pharmacological-chemical coffee making device by infusion."

In 1802, Charles Wyatt obtained a patent in London on an apparatus for distilling coffee.

The first French patent on an improved French drip pot for making coffee "by filtration without boiling" was granted to Hadrot in 1806. Strictly speaking, this was not a filtering device, as it was fitted with a tin composition strainer, or grid. It was very like Count Rumford's percolator announced six years later, as will be seen by comparing the two in chapter XXXIV.

In 1815, Sené invented in France his *Cafetière Sené*, another device to make coffee "without boiling."

About the year 1817, the coffee biggin appeared in England. It was simply a squat earthenware pot with an upper, movable, strainer part made of tin, after the French drip pot pattern. Later models employed a cloth bag suspended from the rim of the pot. It was said to have been invented by a Mr. Biggin; and Dr. Murray, of dictionary fame, seems to have become convinced of this gentleman's existence, although others have doubted it and thought the name was of Dutch origin, the article having been first made for Holland. It has been suggested that, in all probability, the name came from the Dutch word *beggelin*, to trickle, or run down. One thing is certain, coffee biggins came originally from France; so that if there was a Mr. Biggin, he merely introduced them into England. The coffee biggin with which Americans are most familiar is a pot containing a flannel bag or a cylindrical wire strainer to hold the ground coffee through which the boiling water is poured. The Marion Harland pot was an improved metal coffee biggin. The Triumph coffee filter was a cloth-bag device which made any coffee pot a biggin.

In 1819, Morize, a Paris tinsmith, invented a double drip, reversible coffee pot. The device had two movable "filters" and was placed bottom up on the fire until the water boiled, when it was inverted to let the coffee "filter" or drip through.

In 1819, Laurens was granted a French patent on the original pumping-percolator device, in which the water was raised by steam pressure and dripped over the ground coffee.

In 1820, Gaudet, another Paris tinsmith, invented a filtration device that employed a cloth strainer.

In 1822, Louis Bernard Rabaut was granted an English patent on a coffee-making device in which the usual French drip process was reversed by the use of steam pressure to force the boiling water upward through the coffee mass. Caseneuve, of Paris, was granted a patent on a similar device in France in 1824.

In 1825, the first coffee-pot patent in the United States was granted to Lewis Martelley on a machine "to condense the steam and essential oils and return them to the infusion."

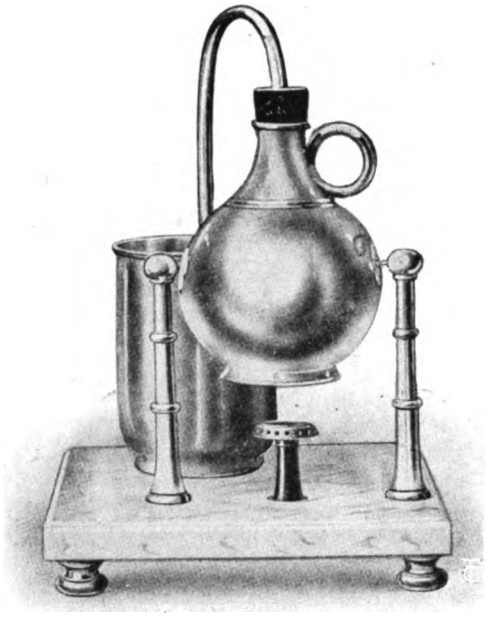
In 1827, the first really practicable pumping percolator, as we understand the meaning today, was invented by Jacques-Augustin Gandais, a manufacturer of plated jewelry in Paris. The boiling water was raised through a tube in the handle and sprayed over the ground coffee suspended in a filter basket, but could not be returned for a further spraying.

In 1827, Nicholas Felix Durant, a manufacturer of Chalons-sur-Marne, was granted a French patent on a "percolator" employing, for the first time, an inner tube to raise the boiling water for spraying over the ground coffee.

In 1839, James Vardy and Moritz Platow were granted an English patent on a kind of urn "percolator", or filter, employing the vacuum process of coffee making, the upper vessel being made of glass.

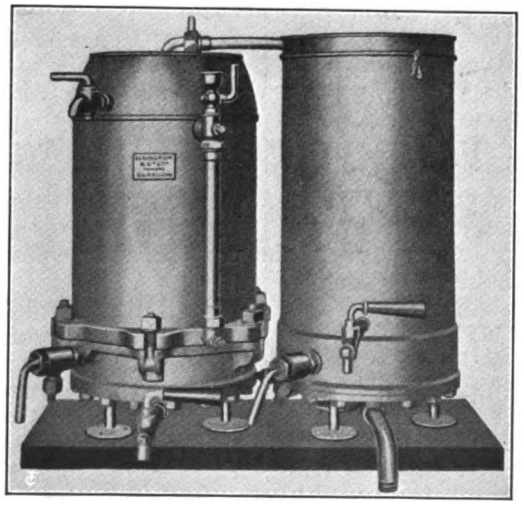
By this time, the pumping percolator, working by steam pressure and by partial vacuum, was in general use in France, England, and Germany. And then began the movement toward the next stage in coffee making — filtration.

About this time (1840), Robert Napier (1791-1876) the Scottish marine engineer, of the celebrated Clyde shipbuilding firm of Robert Napier & Sons, invented a vacuum coffee machine to make coffee by distillation and filtration. The device was never patented; but thirty years later, it was being made in the works of Thomas Smith & Son (Elkington & Co., Ltd., suc-



NAPIER VACUUM COFFEE MAKER

cessors) under the direction of Mr. Napier, the aged inventor. The device consists of a silver globe, brewer syphon, and strainer, as illustrated. It operates as follows: a half-cupful of water is put into the globe, and the gas flame is lighted. The dry coffee is put into the receiver, which is then filled up with boiling water. This will at once become agitated, and will continue so for a few minutes. When it becomes still, the gas flame is turned down, and clear coffee is syphoned over into the globe through the syphon tube, on the end of which, as it rests in the coffee liquid, there is a metal strainer covered with a filter cloth.



NAPIER-LIST STEAM COFFEE MACHINE

The Napierian coffee machine has enjoyed great popularity in England. The principle has in later years been incorporated in the Napier-List steam coffee machine for use in hotels, ships, restaurants, etc. Steam is used as a source of heat, but does not mix with the coffee. List's patent is for an improvement on the Napierian system and was granted in 1891.

It is related that shortly before he died, old Mr. Napier, at the termination of a dispute in Smith & Co.'s factory at Glasgow, where the device was being made under his instruction, said to old Mr. Smith:

SHOWING METHOD OF OPERATION

FINLEY ACKER'S FILTER-PAPER COFFEE POT

"You may be a guid silversmith, but I am a better engineer."

In 1841, William Ward Andrews was granted an English patent on an improved pot employing a pump to force the boiling water through the ground coffee while contained in a perforated cylinder screwed to the bottom of the pot.

In 1842, the first French patent on a glass coffee-making device was granted to Madame Vassieux of Lyons.

Following this, there were numerous patents issued in France and England on double glass-globe coffee-making devices. They were first known as double glass balloons, and most of them employed metal strainers.

After this, there were many "percolator" patents in France, England, and the United States, some of which were for improved forms of the original drip method of the De Belloy device. Others were for the type of machine which came to be known as "percolators" because they employed the principle of raising the heated water and spraying it over the ground coffee in continuous fashion. The story is

THE KIN-HEE POT IN OPERATION

told in chronological order in the chapter on the evolution of coffee apparatus; so it is not necessary to repeat it here. Numerous filtration devices also were produced abroad and in the United States.

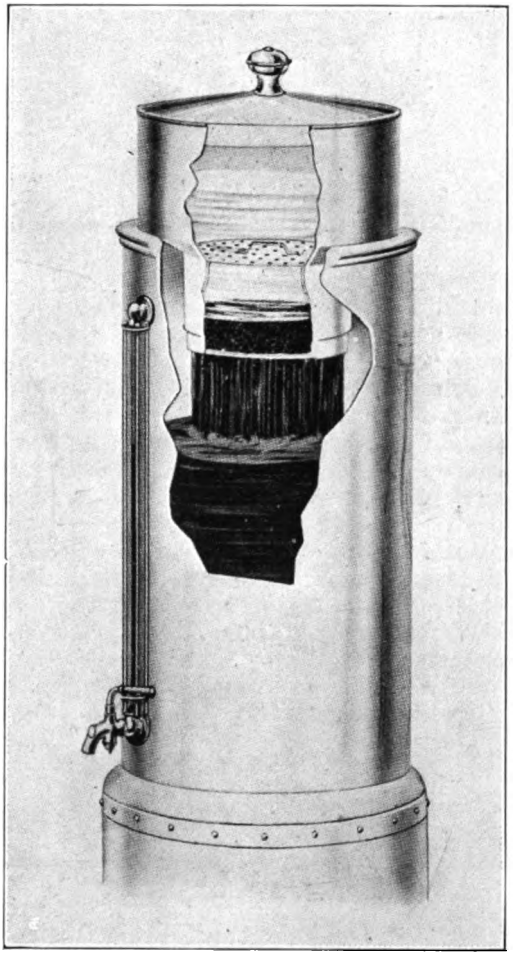
Among the percolators, those of Manning, Bowman & Co., and of Landers, Frary & Clark, became well known here. In the filtration field, the following attained considerable distinction: Harvey Ricker's Half-Minute pot, employing a cotton sack with re-inforced bottom, introduced about 1881; the Kin-Hee pot of 1900; Cauchois' Private Estate coffee maker, using Japanese filter paper, introduced in 1905; Finley Acker's percolator, introduced the same year, which also employed a filter paper between two cylinders having side perforations; the Tricolator, 1908; King's percolator, using filter paper, in 1912; and the "Make-Right", 1911, with its adaptation as presented in the Tru-Bru pot of 1920.

The Make-Right was the invention of Edward Aborn, New York, and comprised two telescoping open wire frames, or baskets, with a flat piece of muslin between them. In the Tru-Bru pot, the same idea was employed, except that the wire frames were so constructed as to furnish four drip points to afford better distribution on the ground coffee and to lessen the time of filtration. There was also a porcelain top, to house and to raise the filtration device, above the brew with an opening through which the boiling water could be poured without exposing the ground coffee.

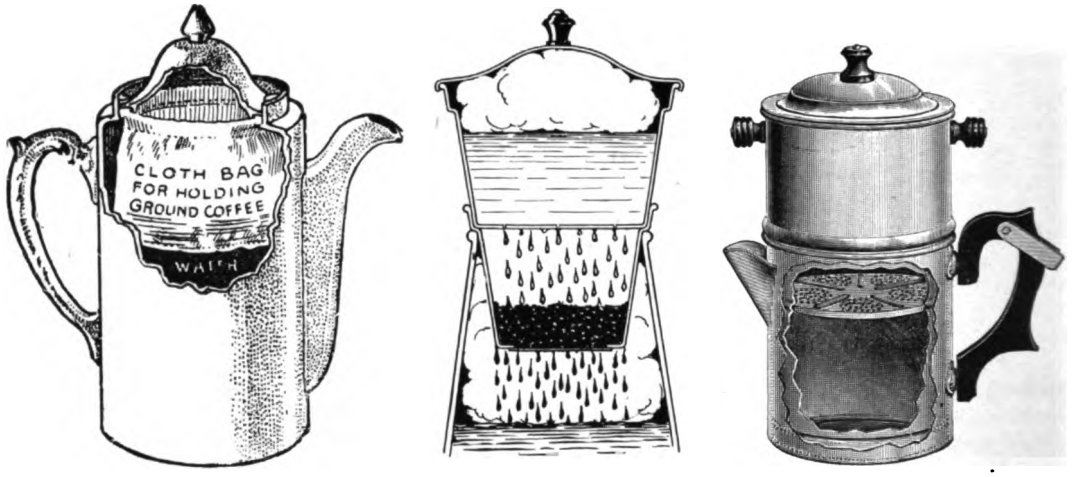
Among later developments of the genuine percolator principle that have attracted attention in this country, mention should be made of the Phylax coffee maker, and the Galt pot.

In 1914-16, there was a revival of interest in the United States in the double glass-globe method of making coffee, introduced into France as "double glass bal-

THE TRICOLATOR IN OPERATION



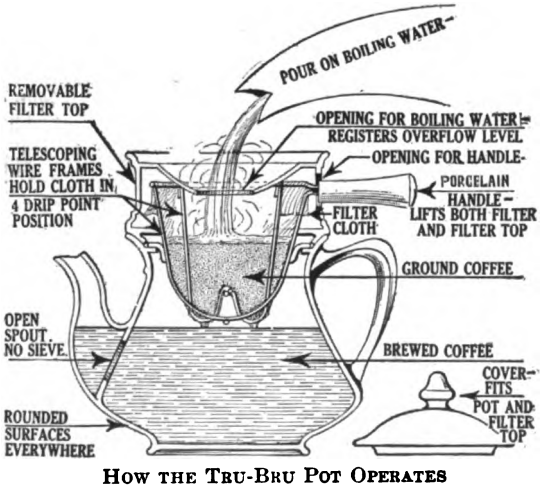
KING PERCOLATOR, AS APPLIED TO A HOTEL OR RESTAURANT URN



THREE TYPES OF AMERICAN COFFEE MAKERS IN OPERATION
Left, Blanke's Cloth Filter — Center, Phylax — Right, Galt Vacuum device

loons" in the first half of the nineteenth century. American ingenuity produced several clever adaptations, and several notable filter improvements. Advertising developed a great demand for glass percolators, as they were first called; but although five attained considerable prominence, only two survived and, at this writing, are still being manufactured. Both are double glass-globe filters employing a spirit lamp, gas, or electricity as heating agents.

Within the last few years, it has become the fashion to obtain patents in the United States on "the art of brewing coffee", or the "art of making coffee". Instances are the patents issued to Messrs. Calkin and Muller. In the Calkin patent (the Phylax device illustrated at the top of this page)


POUR ON BOILING WATER
REMOVABLE FILTER TOP
OPENING FOR BOILING WATER REGISTERS OVERFLOW LEVEL
TELESCOPING WIRE FRAMES HOLD CLOTH IN 4 DRIP POINT POSITION
OPENING FOR HANDLE
PORCELAIN HANDLE LIFTS BOTH FILTER AND FILTER TOP
FILTER CLOTH
GROUND COFFEE
OPEN SPOUT NO SIEVE
BREWED COFFEE
COVER FITS POT AND FILTER TOP
ROUNDED SURFACES EVERYWHERE

HOW THE TRU-BRU POT OPERATES

the "art" consists in controlling the flow of the boiling water by means of the number and spacing of the holes in the water-spreader, so as to restrict the volume and the speed, to effect a quick initial extraction; and then, by means of a new spacing of holes in the infuser, retarding the drip "to attain a prolonged extraction of the tannin and other elements of slow extraction and combining the liquids obtained during the initial and subsequent stages of the brew for attaining a balanced liquid extract."

Muller's "art" (the apparatus is described in chapter XXXIV) consisted in so supplying and supporting the ground coffee in an urn that it is never again subjected to the "decoction" after having been exposed to the air and steam following the first application of the water.

In 1920, William G. Goldsworthy, San Francisco, was granted a United States patent on a process for preparing the beans for making the beverage. The process consisted of grinding the raw dried beans; then packing the ground product in non-combustible and non-soluble porous containers, which are securely closed to keep them unimpaired while the contained coffee is being roasted; and, after cooling, sealing them with gelatine. To brew, container and contents are dropped into a cup of hot water.

This brief review of the evolution of coffee brews shows that coffee making started with boiling, and next became an infusion. After that, the best practise be-

COFFEE-MAKING DEVICES USED IN THE UNITED STATES

1—Marion Harland Pot; 2—Universal Percolator; 3—Galt Vacuum Process Coffee Maker; 4—Universal Electric Urn; 5—English Coffee Biggin (Langley Ware); 6—Universal Cafenoira (Glass Filter); 7—Vienna (Bohemian or Carlsbad) Coffee Machine; 8—Tru-Bru Pot; 9—Tricolator; 10—Manning-Bowman Percolator; 11—Blanke's Sanitary Coffee Pot; 12—Phylax Coffee Maker; 13—Private-Estate Coffee Maker; 14—American French Drip Pot; 15—Kin-Hee Pot; 16—Silex Opalescent Glass Filter; 17—French Drip Pot (Langley Ware).

came divided between simple percolation and filtration, which have continued to the present time. Boiling has also continued to find advocates in every country, even in the United States, where it seems to die hard, no matter how much is done to discredit it. Percolation devices are subdivided into the simple drip pots and the continuous percolation machines, as represented by numerous complicated and high-priced contrivances on the market. Gradually, however, true coffee lovers are realizing that the best results are to be obtained through simple percolation or simple filtration. There are good arguments for both methods.

Coffee Making in Europe in the Nineteenth Century

ENGLAND. We have noted Count Rumford's efforts to reform coffee making in England in the early part of the nineteenth century. Many other scientific men joined the movement. Among them was Professor Donovan, who in the *Dublin Philosophical Journal* for May, 1826, told of his experiments "to ascertain the best methods for extracting all the virtues inherent in the berry." The *Penny Magazine* for June 14, 1834, after deploring "the straw-colored fluid commonly introduced under the misnomer of coffee in England", thus digests Professor Donovan's findings:

> Mr. Donovan found, that what we shall call the medicinal quality of coffee resides in it independent of its aromatic flavor, — that it is possible to obtain the exhilarating effect of the beverage without gratifying the palate, — and, on the other hand, that all the aromatic quality may be enjoyed without its producing any effect upon the animal economy. His object was to combine the two.
>
> The roasting of coffee is requisite for the production of both these qualities; but, to secure them in their full degree, it is necessary to conduct the process with some skill. The first thing to be done is to expose the raw coffee to the heat of a gentle fire, in an open vessel, stirring it continually until it assumes a yellowish colour. It should then be roughly broken, — a thing very easily done, — so that each berry is divided into about four or five pieces, when it must be put into the roasting apparatus. This, as most commonly used, is made of sheet-iron, and is of a cylindrical shape: it no doubt answers the purpose well, and is by no means a costly machine, but coffee may be very well roasted in a common iron or earthenware pot, the main circumstances to be observed being the degree to which the process is carried, and the prevention of partial burning, by constant stirring. One of the requisites for having good coffee is that it shall have been recently roasted.
>
> Coffee should be ground very fine for use, and only at the moment when it is wanted, or the aromatic flavour will in some measure be lost. To extract all its good qualities, the powder requires two separate and somewhat opposite modes of treatment, but which do not offer any difficulty when explained. On the one hand, the fine flavour would be lost by boiling, while, on the other, it is necessary to subject the coffee to that degree of heat in order to extract its medicinal quality. The mode of proceeding, which, after many experiments, Mr. Donovan found to be the most simple and efficacious for attaining both these ends, was the following:—
>
> The whole water to be used must be divided into two equal parts. One half must be put first to the coffee "cold", and this must be placed over the fire until it "just comes to a boil", when it must be immediately removed. Allowing it then to subside for a few moments the liquid must be poured off as clear as it will run. The remaining half of the water, which during this time should have been on the fire, must then be added "at a boiling heat" to the grounds, and placed on the fire, where it must be kept "boiling" for about three minutes. This will extract the medicinal virtue, and if then the liquid be allowed again to subside, and the clear fluid be added to the first portion, the preparation will be found to combine all the good properties of the berry in as great perfection as they can be obtained. If any fining ingredient is used it should be mixed with the powder at the beginning of the process.
>
> Several kinds of apparatus, some of them very ingenious in their construction, have been proposed for preparing coffee, but they are all made upon the principle of extracting only the aromatic flavour, while Professor Donovan's suggestions not only enable us to accomplish that desirable object, but superadd the less obvious but equally essential matter of extracting and making our own all the medicinal virtues.

When Webster and Parkes published their *Encyclopedia of Domestic Economy*, London, 1844, they gave the following as "the most usual method of making coffee in England":

> Put fresh ground coffee into a coffee-pot, with a sufficient quantity of water, and set this on the fire till it boils for a minute or two; then remove it from the fire, pour out a cupful, which is to be returned into the coffee-pot to throw down the grounds that may be floating; repeat this, and let the coffee-pot stand near the fire, but not on too hot a place, until the grounds have subsided to the bottom; in a few minutes the coffee will be clear without any other preparation, and may be poured into cups; in this manner, with good materials in sufficient quantity, and proper care, excellent coffee may be made. The most valuable part of the coffee is soon extracted, and it is certain that long boiling dissipates the fine aroma and flavour. Some make it a rule not to suffer the coffee to boil, but only to bring it just to the boiling point; but it is said by Mr. Donovan that it

requires boiling for a little time to extract the whole of the bitter, in which he conceives much of the exhilarating qualities of the coffee reside.

This work had also the following to say on the clearing of coffee, which was then a much-mooted question:

The clearing of coffee is a circumstance demanding particular attention. After the heaviest parts of the grounds have settled, there are still fine particles suspended for some time, and if the coffee be poured off before these have subsided, the liquor is deficient in that transparency which is one test of its perfection; for coffee not well cleared has always an unpleasant bitter taste. In general, the coffee becomes clear by simply remaining quiet for a few minutes, as we have stated; but those who are anxious to have it as clear as possible employ some artificial means of assisting the clearing. The addition of a little isinglass, hartshorn shavings, skins of eels or soles, white of eggs, egg shells, etc., has been recommended for clearing; but it is evident that these substances, to produce their effect, which is upon the same principle as the fining of beer or wine, should be dissolved previously, for if put in without, it would require so much time to dissolve, that the flavour of the coffee would vanish.

Coffee-making devices of this period in England, in addition to the Rumford type of percolator and the popular coffee biggin, included Evans' machine provided with a tin air-float to which was attached a filter bag containing the coffee; Jones' apparatus, a pumping percolator; Parker's steam-fountain coffee maker, which forced the hot water upward through the ground coffee; Platow's patent filter, previously mentioned, a single vacuum glass percolator in combination with an urn; Brain's vacuum or pneumatic filter employing a "muslin, linen or shamoy leather filter" and an exhausting pump, designed for kitchen use; and Palmer's and Beart's pneumatic filtering machines of similar construction.

Cold infusions were common, the practise being to let them stand overnight, to be filtered in the morning, and only heated, not boiled.

Coffee grinding for these various types of coffee makers was performed by iron mills; the portable box mill being most favored for family use. "It consisted of a square box either of mahogany or iron japanned, containing in the interior a hollow cone of steel with sharp grooves on the inside; into this fits a conical piece of hardened iron or steel having spiral grooves cut upon its surface and capable of being turned round by a handle." There was a drawer to receive the finely ground coffee. Larger wall-mills employed the same grinding mechanism.

In 1855, Dr. John Doran wrote in his "Table Traits":

With regard to the making of coffee, there is no doubt that the Turkish method of pounding the coffee in a mortar is infinitely superior to grinding it in a mill, as with us. But after either method the process recommended by M. Soyer may be advantageously adopted; namely, "Put two ounces of ground coffee into a stewpan, which set upon the fire, stirring the coffee round with a spoon until quite hot, then pour over a pint of boiling water; cover over closely for five minutes, pass it through a cloth, warm again, and serve."

From observations by G. W. Poore, M.D., London, 1883, we are given a glimpse of coffee making in England in the latter part of the nineteenth century. He said:

"Those who wish to enjoy really good coffee must have it fresh roasted. On the Continent, in every well-regulated household, the daily supply of coffee is roasted every morning. In England this is rarely done.

If roasted coffee has to be kept, it must be kept in an air-tight vessel. In France, coffee used to be kept in a wrapper of waxed leather, which was always closely tied over the contained coffee. In this way the coffee was kept from contact with any air.

The Viennese say that coffee should be kept in a glass bottle closed with a bung, and that coffee should on no account be kept in a tin canister.

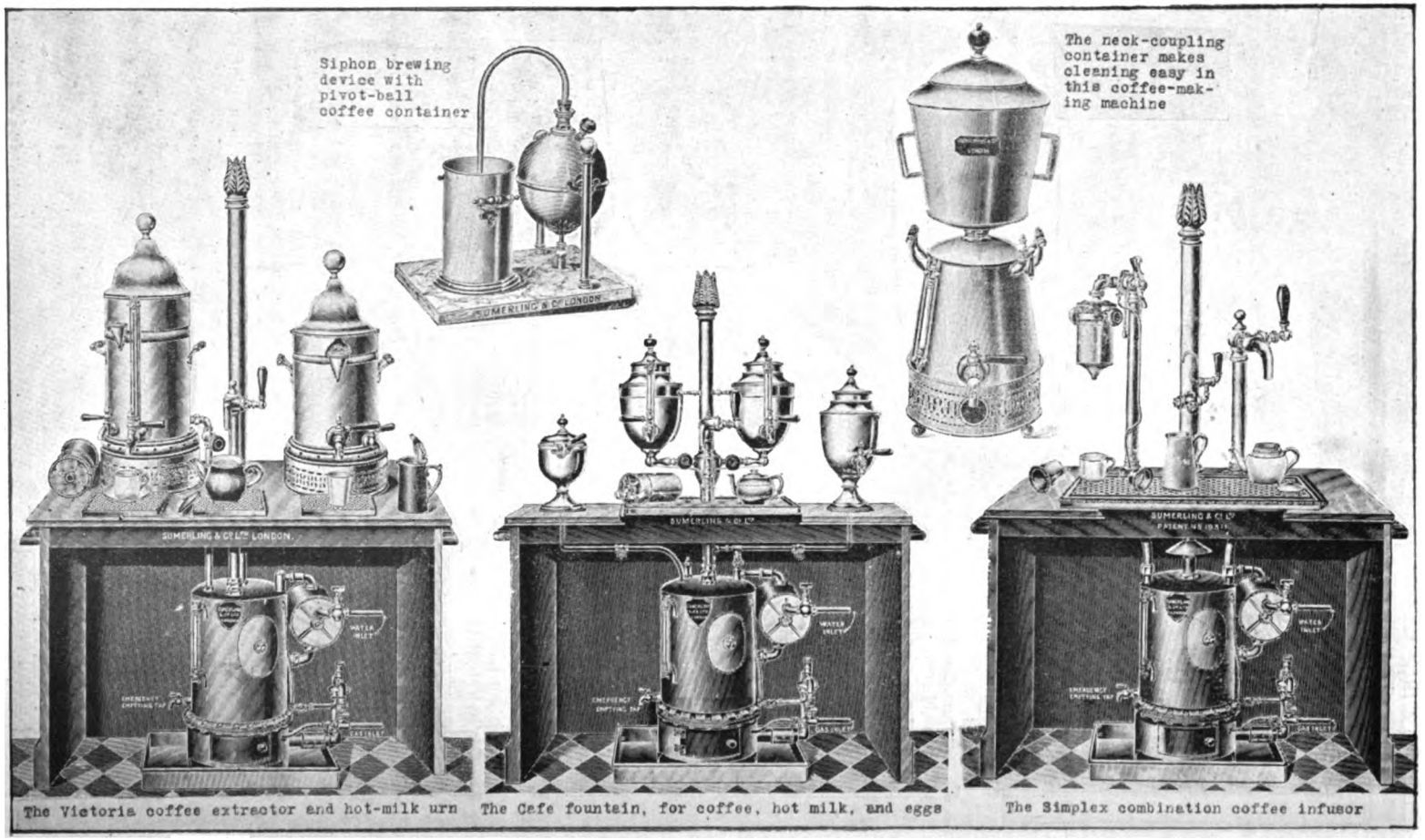
The coffee having been roasted, it has to be reduced to a coarse powder before the infusion is made. The grinding and powdering of coffee should be done just before it is wanted, for if the whole coffee seeds quickly lose their aroma, how much more quickly will the aroma be dissipated from coffee which has been reduced to a fine powder? Nothing need be said in the matter of coffee mills. They are common enough, varied enough, and cheap enough to suit all tastes.

To insure a really good cup of coffee attention must be given to the following points:

1. Be sure that the coffee is good in quality, freshly roasted, and fresh ground.

2. Use sufficient coffee. I have made some experiments on this point, and I have come to the conclusions that one ounce of coffee to a pint of water makes poor coffee, 1½ ounces of coffee to a pint of water makes fairly good coffee, two ounces of coffee to a pint of water makes excellent coffee.

3. As to the form of coffee pot I have nothing to say. The varieties of coffee machines are very numerous and many of them are useless incumbrances. At the best, they can not be regarded as absolutely necessary. The Brazilians insist that coffee pots should on no account be made of metal, but that porcelain or earthenware is alone permissible. I have been in the habit of late of having my coffee made in a common jug provided with a strainer, and I believe there is nothing better.


Siphon brewing device with pivot-ball coffee container
The neck-coupling container makes cleaning easy in this coffee-making machine
SUMERLING & Cº LONDON
The Victoria coffee extractor and hot-milk urn
The Cafe fountain, for coffee, hot milk, and eggs
The Simplex combination coffee infusor

COFFEE-MAKING MACHINES POPULAR IN ENGLISH HOTELS AND RESTAURANTS

4. Warm the jug, put the coffee into it, boil the water, and pour the boiling water on the coffee, and the thing is done.

5. Coffee must not be boiled, or at most it must be allowed just to "come to a boil", as cook says. If violent ebullition takes place, the aroma of the coffee is dissipated, and the beverage is spoiled.

The most economical way of making coffee is to put the coffee into a jug and pour cold water upon it. This should be done some hours before the coffee is wanted — over night, for instance, if the coffee be required for breakfast. The light particles of coffee will imbibe the water and fall to the bottom of the jug in course of time. When the coffee is to be used stand the jug in a saucepan of water or a bainmarie and place the outer vessel over the fire till the water contained in it boils. The coffee in this way is gently brought to the boiling point without violent ebullition, and we get the maximum extract without any loss of aroma.

Always make your coffee strong. *Café au lait* is much better if made with one-fourth strong coffee and three-fourths milk than if made half-and-half with a weaker coffee: this is evident.

It is a mistake to suppose that coffee can not be made without a great deal of costly and cumbersome apparatus.

THE CONTINENT. Rossignon has given us a general view of coffee making on the continent of Europe in the middle of the nineteenth century. He says:

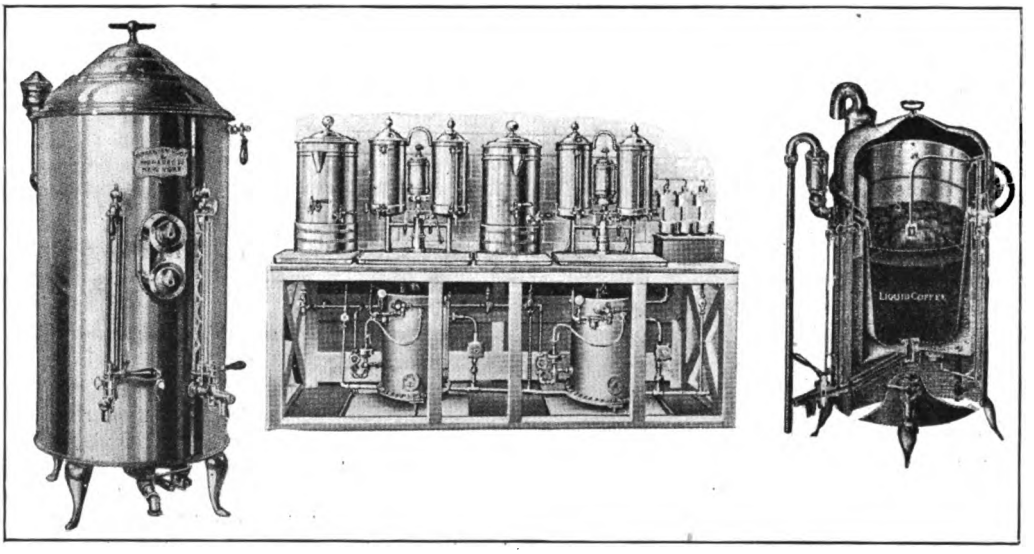
Formerly small bags of baize were used to percolate coffee. The water was poured on the coffee, and when they were new the coffee percolated through them was pretty good, but when they had been used a few times they became greasy and it was very difficult to clean them by any means. The greasy baize altered the quality of the coffee, and in spite of all efforts to keep it clean the coffee had a tarnished appearance very disagreeable to the view. Very few persons use them at present. The apparatus most in use for the percolation of coffee is a tin coffee-pot composed of two parts. The upper one has a filter or sieve on which the coffee powder is placed and through which the filtered coffee must pass. Boiling water is poured on the coffee. The liquor which percolates falls in the second part. Then the upper part is removed and the coffee is ready as a beverage. There are very many systems of coffee pots. One of the best is the Russian one, which consists of a receptacle composed of two parts resembling two halves of an egg screwed together. One part contains the hot water and the other the ground coffee. In the center there is a filter. Turning the pot upside down the percolation takes place very slowly and no aroma is lost.

The tin plate which is generally used to make the coffee pot has many drawbacks. One of them is the dissolution of iron which takes place after it has been used for a short time.

The quality of coffee, as a beverage, depends principally on the degree of heat of the water. Experience has shown that a medium class of coffee prepared at a moderate heat gives a very good liquor, while excellent coffee on which boiling water has been poured did not give a very good liquor. Therefore, instead of pouring boiling water at 100°C. in a porcelain or silver coffeepot, those who desire to make a perfect coffee must use water heated from 60° to 75°C.

FRANCE. Also about the middle of the nineteenth century the French naturalist, Du Tour, thus describes one manner of making coffee in France:

Let the powder be poured into the coffee-pot filled with boiling water, in the proportion of two ounces and a half to two pounds, or two English pints of water. Let the mixture be



The Duparquet Still's machine The Kellum

THREE WELL KNOWN MAKES OF LARGE COFFE URNS

stirred with a spoon, and the coffee-pot be soon taken off the fire, but suffered to remain closely shut, for about at least two hours, on the warm ashes of a wood fire. During the infusion the liquor should be several times agitated by a chocolate frother, or something of the same kind, and be finally left for about a quarter of an hour to settle.

Café au lait was not made by boiling coffee and milk together, as milk was not proper to extract the coffee; the coffee was first made as *café noir,* only stronger; as much of this coffee was poured in the cup as was required, and the cup was then filled up with *boiled* milk. *Café a la crème* was made by adding boiled cream to strong clear coffee and heating them together.

In France, during the latter part of the nineteenth century, coffee was roasted over charcoal fires in earthenware dishes or saucepans, stirred with a spatula or wooden spoon, or in small cylinder or globular roasters of iron. Gas roasting was also practised. When roasted in large batches, the beans were cooled in wicker baskets, tossed into the air. The grinding was preferably done in mortars or in box mills of pyramid shape with receiving drawers, and was not too fine.

The usual method of making coffee in France among the better classes at this time was by means of improved De Belloy drip devices, double glass vacuum filters, pumping percolators (double circulation devices), the Russian egg-shaped pots, and the Viennese machines. The last-named were metal pumping percolators with glass tops, usually swung between the uprights of a carry arrangement, the base of which held a spirit lamp.

Among the numerous French machines which became well known were: Reparlier's glass "filter"; Egrot's steam cloth-filter machine, and Malen's percolator apparatus, both designed for barracks and ships, where previously the coffee had been brewed in soup kettles; Bouillon Muller's steam percolator; Laurent's whistling coffee pot, a steam percolator which announced when the coffee was ready; Ed. Loysel's rapid filter, a hydrostatic percolator; and those pots to which Morize, Lemare, Grandin, Crepaux, and Gandais gave their names.

In 1892, the French minister of war directed that, in the army roasting and grinding operations, the coffee chaff should no longer be thrown away, as it had been found that it was rich in caffein and aroma constituents.

POPULAR GERMAN DRIP POT

Coffee *à la minute,* which appeared in France in the nineteenth century, was made by decoction or infusion through a funnel pierced with holes and covered inside with blotting paper, or a woolen strainer cloth. This system, says Jardin, suggested the economical coffee pot.

A popular German drip coffee maker of the late nineteenth century employs a plug in the spout which provides air pressure to hold back the infusion until the plug is removed.

Pierre Joseph Buc'hoz, physician to the king of Poland, in 1787, made a business of supplying roasted coffee in small packets, each sufficient for one cup. He built up quite a trade until one day he was caught substituting roasted rye for coffee. This was the Buc'hoz method of making coffee, much practised by the lower classes because he was looked upon as an authority:

Boil the water in a coffee pot. When it boils, draw it from the fire long enough to add an ounce of coffee powder to a pound of water. Stir with a spoon. Return it to the fire and when it boils move it back somewhat from the heat and let it simmer for eight minutes. Clarify with sugar or deer horn powder.

Early Coffee Making in the United States

The coffee drink reached the colonies, first as a beverage for the well-to-do, about 1668. When introduced to the general public through the coffee houses about 1700, it was first sipped from small dishes as in England; and no one inquired too closely as to how it was made. When, half a century later, it had displaced beer and tea for breakfast, its correct making became a matter of polite inquiry. It was not until

well into the nineteenth century that there was any suggestion of scientific interest, and not until within the last decade was any real chemical analysis of brewed coffee undertaken with a view to producing a scientific cup of the beverage.

At first, owing to the great distances, and difficulties surrounding communications, between the colonies, news of improvements in coffee makers and coffee making traveled slowly, and coffee customs brought from Europe by the early settlers became habits that were not easily changed. Some of the worst have clung on, ignoring the march of improvement, and seem as firmly entrenched in suburban and rural communities today as they were two hundred years ago.

Indeed, despite the fact that the United States have been the largest consumer of coffee among the nations for nearly half a century, it is only within the last ten years that coffee properly prepared could be obtained outside the principal cities. Even today, the average consumer is sadly in need of education in correct coffee brewing. It would be an excellent idea if all the coffee propaganda funds could be concentrated on a study of this one phase of the coffee question for several years, and the recommendations published in such fashion as firmly to fix in the minds of the rising generation a knowledge of correct coffee brewing. The facts of the case are that, generally speaking, coffee is still prepared in slovenly fashion in the average American home. However, with the good work done in recent years by organized trade effort to correct this abuse of our national beverage, signs are plentiful that the time is not far distant when a lasting reformation in coffee making will have been accomplished.

In colonial times the coffee drink was mostly a decoction. Esther Singleton tells us that in New Amsterdam coffee was boiled in a copper pot lined with tin and drunk as hot as possible with sugar or honey and spices. "Sometimes a pint of fresh milk was brought to the boiling point and then as much drawn tincture of coffee was added, or the coffee was put in cold water with the milk and both were boiled together and drunk. Rich people mixed cloves, cinnamon or sugar with ambergris in the coffee.[4]"

Ground cardamom seeds were also used to flavor the decoction.

In the early days of New England, the whole beans were frequently boiled for hours with not wholly pleasing results in forming either food or drink[5].

In New Orleans, the ground coffee was put into a tin or pewter coffee dripper, and the infusion was made by slowly pouring the boiling water over it after the French fashion. The coffee was not considered good unless it actually stained the cup. This method still obtains among the old Creole families.

Boiling coarsely pounded coffee for fifteen minutes to half an hour was common practise in the colonies before 1800.

In the early part of the nineteenth century, the best practise was to roast the coffee in an iron cylinder that stood before the hearth fire. It was either turned by a handle or wound up like a jack to go by itself. The grinding was done in a lap or wall mill; and among the best known makes were Kenrick's, Wilson's, Wolf's, John Luther's, George W. M. Vandegrift's, and Charles Parker's Best Quality.

To make coffee "without boiling" the cookery books of the period advised the housewife to obtain "a biggin, the best of which is what in France is called a Grecque."

In 1844, the *Kitchen Directory and American Housewife's* advice on the subject of coffee making was the following:

Coffee should be put in an iron pot and dried near a moderate fire for several hours before roasting (in pot over hot coals and stirring constantly). It is sufficiently roasted when biting one of the lightest colored kernels — if brittle the whole is done. A coffee roaster is better than an open pot. Use a tablespoonful ground to a pint of boiling water. Boil in tin pot twenty to twenty-five minutes. If boiled longer it will not taste fresh and lively. Let stand four or five minutes to settle, pour off grounds into a coffee pot or urn. Put fish skin or isinglass size of a nine pence in pot when put on to boil or else the white and shell of half an egg to a couple of quarts of coffee. French coffee is made in a German filter, the water is turned on boiling hot and one-third more coffee is needed than when boiled in the common way.

In 1856 the *Ladies' Home Magazine* (now the *Ladies' Home Journal*) printed the following, which fairly sums up the coffee making customs of that period:

Coffee, if you would have its best flavor, should be roasted at home; but *not in an open pan*, for this permits a large amount of aroma to escape. The roaster should be a closed sphere

[4] *Dutch New York*, 1909 (p. 132).

[5] Earle, Alice Morse. *Customs and Fashions in Old New England*, 1909.

or cylinder. The aroma, upon which the good taste of the coffee depends, is only developed in the berry by the roasting process, which also is necessary to diminish its toughness, and fit it for grinding. While roasting, coffee loses from fifteen to twenty-five percent of its weight, and gains from thirty to fifty percent in bulk. More depends upon the proper roasting than upon the quality of the coffee itself. One or two scorched or burned berries will materially injure the flavor of several cupfuls. Even a slight overheating diminishes the good taste.

The best mode of roasting, where it is done at home, is to dry the coffee first, in an open vessel, until its color is slightly changed. This allows the moisture to escape. Then cover it closely and scorch it, keeping up a constant agitation, so that no portion of a kernel may be unequally heated. Too low and too slow a heat dries it up without producing the full aromatic flavor; while too great heat dissipates the oily matter and leaves only bitter charred kernels. It should be heated so as to acquire a uniform deep cinnamon color, and an oily appearance, but never a deep, dark brown color. It then should be taken from the fire and kept closely covered until cold, and further until used. While unroasted coffee improves by age, the roasted berries will very generally lose their aroma if not covered very closely. The ground stuff kept on sale in barrels, or boxes, or in papers, is not worthy the name of coffee.

Coffee should not be ground until just before using. If ground over night, it should be covered; or, what is quite as well, put into the boiler and covered with water. The water not only retains the valuable oil and other aromatic elements, but also prepares it by soaking for immediate boiling in the morning.

If the coffee pot (the "*Old Dominion*", of course, for in a common boiler this process would ruin the coffee by wasting the aroma) be set on the range or stove, or near the fire, so as to be kept hot all night preparatory to boiling in the morning, the beverage will be found in the morning, rich, mellow, and of a most delicious flavor.

Coffee used at supper time should be placed on or near the fire immediately after dinner and kept hot or simmering — not boiling — all the afternoon.

Try this method if you wish coffee in perfection.

Wood's improved coffee roaster is acknowledged to be the best article of the kind now in use.

This patent coffee roaster has been improved by the introduction of a triangular flange inside of each of the hemispheres, as seen in the cut. These flanges, as the roaster is turned, catch the coffee and throw it from the inner surface, thus insuring a perfect uniformity in the burning.

The Woods roaster (1849) and the Old Dominion Coffee Pot (1856) have been referred to in chapter XXXIV.

From the *Encyclopedia of Practical Cookery*, we learn some more about the customs prevailing "among the first cooks in the country" in roasting and making coffee in the United States about the middle of the nineteenth century. For example:

ROASTING COFFEE BEANS

Put the beans in the roaster, set this before a moderate fire, and turn slowly until the Coffee takes a good brown colour; for this it should require about twenty-five minutes. Open the cover to see when it is done. If browned, transfer it to an earthen jar, cover it tightly, and use when needed.

Or a more simple plan, and even more effectual, is to take a tin baking-dish, butter well the bottom, put the Coffee in it, and set it in a moderate oven until the beans take a strong golden colour, twenty minutes sufficing for this. Toss them frequently with a wooden spoon as they are cooking.

Another plan is to put in a small frying-pan 1 lb. of raw Coffee-beans and set the pan on the fire, stirring and shaking occasionally till the beans are yellow; then cover the frying-pan and shake the Coffee about till it is a dark brown. Move the pan off the fire, keep the cover on, and when the beans are a little cool, break an egg over them and stir them until they are all well coated with the egg. Then store the Coffee in tins or jars with tight-fitting lids, and grind it as wanted for use.

Coffee should always be bought in the bean and ground as required, otherwise it is liable to extensive adulteration with chicory (or succory); some persons like the addition, but the epicure who is really fond of Coffee would not admit of its introduction.

MAKING BREAKFAST COFFEE.

Allow 1 tablespoonful of Coffee to each person. The Coffee when ground should be measured, put into the Coffee-pot, and boiling water poured over it in the proportion of ¾ pint to each tablespoonful of Coffee, and the pot put on the fire; the instant it boils, take the pot off, uncover it, and let it stand a minute or two; then cover it again, put it back on the fire, and let it boil up again. Take it from the fire and let it stand for five minutes to settle. It is then ready to pour out.

This work recommended as among the latest and best devices for coffee making, all those manufactured or sold in this country by Adams & Son; the English coffee biggin; General Hutchinson's coffee pot and urn, combining De Belloy's and Rumford's ideas; Le Brun's Cafetiére for making coffee by distillation and by steam pressure, passing it directly into the cup; a Vienna coffee-making machine, and a Russian coffee reversible pot called the Potsdam.

Among two score of coffee recipes for making various kinds of extracts, ices, candies, cakes, etc., flavored with coffee, there is a curious one for coffee beer, the invention of Frenchman named Pluehart.

"The ingredients and quantities in a thousand parts are — Strong coffee 300; rum 300; syrup thickened with gum senegal 65; alcoholic extract of orange peel 10; and water 325."

"It does not appear to have reached any important degree of popularity", adds the editor.

In 1861, Godey's *Lady's Book and Magazine* noted with approval the growing custom of hotel and restaurant guests to order coffee instead of wines or spirits with their dinners. On the subject of "How to make a cup of coffee" it had this to say:

Which is the best way of making coffee? In this particular notions differ. For example, the Turks do not trouble themselves to take off the bitterness by sugar, nor do they seek to disguise the flavor by milk, as is our custom. But they add to each dish a drop of the essence of amber, or put a couple of cloves in it, during the process of preparation. Such flavoring would not, we opine, agree with western tastes. If a cup of the very best coffee, prepared in the highest perfection and boiling hot, be placed on a table in the middle of a room and suffered to cool, it will, in cooling, fill the room with its fragrance; but becoming cold, it will lose much of its flavor. Being again heated, its taste and flavor will be still further impaired, and heated a third time, it will be found vapid and nauseous. The aroma diffused through the room proved that the coffee has been deprived of its most volatile parts, and hence of its agreeableness and virtue. By pouring boiling water on the coffee, and surrounding the containing vessel with boiling water, the finer qualities of the coffee will be preserved.

Boiling coffee in a coffee-pot is neither economical or judicious, so much of the aroma being wasted by this method. Count Rumford (no mean authority) states that one pound of good Mocha, when roasted and ground, will make fifty-six cups of the very best coffee, but it must be ground finely, or the surfaces of the particles only will be acted upon by the hot water, and much of the essence will be left in the grounds.

In the East, coffee is said to arouse, exhilarate, and keep awake, allaying hunger, and giving to the weary renewed strength and vigor, while it imparts a feeling of comfort and repose. The Arabians, when they take their coffee off the fire, wrap the vessel in a wet cloth, which fines the liquor instantly, and makes it cream at the top. There is one great essential to be observed, namely, that coffee should not be ground before it is required for use, as in a powdered state its finer qualities evaporate.

We pass over the usual modes of making coffee, as being familiar to every lady who presides over every household; and content ourselves with the most modern and approved Parisian methods, though we may add that a common recipe for good coffee is — two ounces of coffee and one quart of water. Filter or boil ten minutes, and leave to clear ten minutes.

The French make an extremely strong coffee. For breakfast, they drink one-third of the infusion, and two-thirds of hot milk. The *café noir* used after dinner, is the very essence of the berry. Only a small cup is taken, sweetened with white sugar or sugar-candy, and sometimes a little *eau de vie* is poured over the sugar in a spoon held above the surface, and set on fire; or after it, a very small glass of *liqueur*, called a *chasse-café*, is immediately drunk. But the best method, prevalent in France, for making coffee (and the infusion may be strong or otherwise as taste may direct) is to take a large coffee-pot with an upper receptacle made to fit close into it, the bottom of which is perforated with small holes, containing in its interior two movable metal strainers, over the second of which the powder is to be placed, and immediately under the third. Upon this upper strainer pour boiling water, and continue to do so gently; until it bubbles up through the strainer; then shut the cover of the machine close down, place it near the fire, and so soon as the water has drained through the coffee, repeat the operation until the whole intended quantity be passed. No finings are required. Thus all the fragrance of its perfume will be retained with all the balsamic and stimulating powers of its essence. This is a true Parisian mode, and *voila!* a cup of excellent coffee.

This article is most interesting in that it shows the revolt against boiling coffee had started in the United States; also that the importance of fine grinding was being recognized and emphasized by the leaders of the best thought of the nation.

Probably the first scientific inquiry into the subject of coffee roasting and brewing in the United States was that detailed by August T. Dawson and Charles M. Wetherill, Ph.D., M.D., in the *Journal of the Franklin Institute* for July and August, 1855. The following is a digest:

There are two classes of beverages: 1, alcoholic, and 2, nitrogenized. Nitrogenized foods are effective to replace the substance of the different organs of the body wasted away by the process of vitality. Coffee is one of these.

Besides the tannin, the coffee berry contains two substances, one the nitrogenized quality, caffeine, which is about one per cent and is not altered in roasting, and the other a volatile oil which is developed in roasting and which gives the coffee its flavor. Dr. Julius Lehman (Liebig's Annales LXXXVII, 205) says that coffee retards the waste tissues of the body and diminishes the amount of food necessary to preserve life. This effect is due to the oil. Much of the nutritive portion of coffee is lost by European methods of making.

Good coffee is very rare. These experiments were made to ascertain whether a potable coffee could not be offered to the public at as low a price as the raw or roasted now is. In order to be successful we needed to extract a larger portion of the nutritive substance than is extracted in the household. The experiments have proved vain.

As a result of our experiments with different ways of roasting and brewing coffee, we have found the following plan to be the most convenient and the best: the coffee will taste the same every time and it will taste good. If a good berry be properly roasted and the infusion be of the proper strength, good coffee must result. A Mocha berry should be selected and roasted seven or eight pounds at a time in a cylindrical drum. After roasting it should be placed in a stone jar with a mouth three inches in diameter. The jar should be closed air-tight. This will furnish two cups of coffee daily for six months. A quart should be taken from the jar at a time and ground. The ground coffee should be kept in covered glass jars.

The best coffee pot was found to be the common biggin having an upper compartment with a perforated bottom upon which to place the coffee. To make one cup of this infusion, place half an ounce of ground coffee in the upper compartment and six fluid ounces of water into the bottom. Put the biggin over a gas lamp. After three minutes the water will boil. When steam appears, take the biggin from the fire and pour the water into a cup and thence immediately into the top of the biggin where it will extract the berry by replacement. (Here follows an experiment.)

This experiment shows that loss of weight is no criterion that coffee is properly roasted, neither is the color (by itself) nor the temperature, nor the time.

Next we experimented to ascertain whether the aroma developed by roasting coffee and which is lost might not be collected and added to the coffee at pleasure. An attempt was made to drive the volatile oils from roasted coffee by steam and make a dried extract of the residual coffee to which the oils were to be later added. Two attempts were made and both failed. It appears that but a small quantity of the aroma is lost in roasting and that is mixed with bad smelling vapors from which it is impossible to free it.

Then we tried to make a potable coffee by making an aqueous extract of raw coffee, evaporating to dryness and roasting the residue. (Here follows the experiment.)

This also was unsuccessful. The great trouble here is a dark shiny residue, which, while tasteless, is very disagreeable to look at. In the preparation of coffee by boiling, two and a half times as much matter is extracted as by biggin.

The proper method of roasting coffee is as follows: It should be placed in a cylinder and turned constantly over a bright fire. When white smoke begins to appear, the contents should be closely watched. Keep testing the grains. As soon as a grain breaks easily at a slight blow, at which time the color will be a light chestnut brown, the coffee is done. Cool it by lifting some up and dropping it back with a tin cup. If it be left to cool in a heap there is great danger of over-roasting. Keep the coffee only in air-tight vessels. *Measure* the infusions, a half ounce of coffee to six ounces of water per cup.

All "extracts of coffee" are worthless. Most of them are composed of burned sugar, chicory, carrots, etc.

In 1883, an authority of that day, Francis B. Thurber, in his book, *Coffee; from Plantation to Cup,* which he dedicated to the railroad restaurant man at Poughkeepsie, because he served an "ideal cup of coffee", came out strongly for the good old boiling method with eggs, shells included. This was the Thurber recipe:

Grind moderately fine a large cup or small bowl of coffee; break into it one egg with shell; mix well, adding enough cold water to thoroughly wet the grounds; upon this pour one pint of boiling water: let it boil slowly for ten to fifteen minutes, according to the variety of coffee used and the fineness to which it is ground. Let it stand three minutes to settle, then pour through a fine wire-sieve into a warm coffee pot: this will make enough for four persons. At table, first put the sugar into the cup, then fill half-full of boiling milk, add your coffee, and you have a delicious beverage that will be a revelation to many poor mortals who have an indistinct remembrance of, and an intense longing for, an ideal cup of coffee. If cream can be procured so much the better, and in that case boiling water can be added either in the pot or cup to make up for the space occupied by the milk as above; or condensed milk will be found a good substitute for cream.

In 1886, however, Jabez Burns, who knew something about the practical making of the beverage as well as the roasting and grinding operations, said:

Have boiling water handy. Take a clean dry pot and put in the ground coffee. Place on fire to warm pot and coffee. Pour on sufficient boiling water, not more than two-thirds full. As soon as the water boils add a little cold water and remove from fire. To extract the greatest virtue of coffee grind it fine and pour scalding water over it.

John Cotton Dana, of the Newark Public Library, says he remembers how in his old home in Woodstock, Vt., they had always, in the attic, a big stone jar of green coffee. This was sacred to the great feast days, Thanksgiving, Christmas, etc. Just before those anniversaries, the jar was brought forward and the proper amount of coffee was taken out and roasted in a flat sheet-iron pan on the top of the stove, being stirred constantly and watched with great care. "As my memory seems to say that this was not constantly done," says Mr. Dana, "it would seem that, even then, my father, who kept the general store in the village, bought roasted coffee in Boston or New York."

At the close of the century, there were still many advocates of boiling coffee; but although the coffee trade was not quite ready to declare its absolute independence in this

direction, there were many leaders who boldly proclaimed their freedom from the old prejudice. Arthur Gray, in his *Over the Black Coffee,* as late as 1902, quoted "the largest coffee importing house in the United States" as advocating the use of eggs and egg-shells and boiling the mixture for ten minutes.

Latest Devclopments in Better Coffee Making

Better coffee making by co-operative trade effort got its initial stimulus at the 1912 convention of the National Coffee Roasters Association. As a result of discussions at that meeting and thereafter, a Better Coffee Making Committee was created for investigation and research.

The coffee trade's declaration of independence in the matter of boiled coffee was made at the 1913 convention of the National Coffee Roasters Association, when, after hearing the report of the Better Coffee Making Committee, presented by Edward Aborn of New York, it adopted a resolution saying that the recommendations met with its approval and ordering that they be printed and circulated.

The work done by the committee included "the first chemical analysis of brewed coffee on record", a study of grindings, and a comparison of the results of four brewing methods. Its conclusions and recommendations were embodied in a booklet published by the National Coffee Roasters Association, entitled *From Tree to Cup with Coffee,* and were as follows:

Roasting

The Roaster or "Coffee Chef" is the only cook necessary to a good cup of coffee. He sends it to the consumer a completely cooked product.

In the roasting process the berries swell up by the liberation of gases within their substance. The aromatic oils contained in the cells are sufficiently developed or "cooked", and made ready for instantaneous solution with boiling water, when the cells are thoroughly opened by grinding.

The roasting principles of different green coffees vary. Trained study and a nice science in timing the roast and manipulating the fire is necessary to a perfect development of aroma and flavor.

The drinking quality is largely dependent upon the experienced knowledge of the coffee roaster and his scientific methods and modern machinery, by which the coffee is not only roasted, but cleaned, milled and completely manufactured to a high point of perfection.

In their National Association work, the wholesale roasters are giving the public new facts and valuable information, from scientific researches, investigations, etc.

Grinding. The roasted berry is constructed of fibrous tissues formed into tiny cells visible only under the microscope, which are the "packages" wherein are stored the whole value of coffee, the aromatic oils. Like cutting open an orange, the grinding of coffee is the opening of surrounding tissue and pulp, and the finer it is cut the more easily are the "juices" released.

The fibrous tissue itself is waste material, yielding, by boiling or too long percolations, a coffee colored liquid which is fibrous and twangy in taste, has no aromatic character, and contains undesirable elements.

The true strength and flavor of roasted coffee is ground out, not boiled out. The finer coffee is ground, the more thoroughly are the cells opened, the surfaces multiplied, and the aromatic oils made ready for separation from their husks. Hence it follows that:

Coarse ground coffee is unopened coffee — coffee thrown away.

The finer the grind, the better and greater the yield. With pulverized coffee (fine as corn meal) the fully released aromatic oils are instantaneously soluble with boiling water.

In ground coffee the oils are standing in "open packages," escaping into the air and absorbing moisture, etc., necessitating quick use or confinement in air proof and moisture proof protection.

Brewing. From scientific researches by the National Coffee Roasters' Association, including the first chemical analysis on record of brewed coffee, produced by various brewing methods, the fundamental principles of coffee making have been clearly established. These principles are simple, and when once understood equip any person to intelligently judge the merits and defects of the various coffee making devices on the market. They constitute the law of coffee brewing, and may be stated as follows:

Correct brewing is not "cooking." It is a process of extraction of the already cooked aromatic oils from the surrounding fibrous tissue, which has no drinkable value. Boiling or stewing cooks in the fibre, which should be wholly discarded as dregs, and damages the flavor and purity of the liquid. Boiling coffee and water together is ruin and waste.

The aromatic oils, constituting the whole true flavor, are extracted instantly by boiling water when the cells are thoroughly opened by fine grinding. The undesirable elements, being less quickly soluble, are left in the grounds in a quick contact of water and coffee. The coarser the grind the less accessible are the oils to the water, thus the inability to get out the strength from coffee not finely enough ground.

Too long contact of water and coffee causes twang and bitterness, and the finer the grind the less the contact should be. The infusion, when brewed, is injured by being boiled or overheated. It is also damaged by being chilled, which breaks the fusion of oils and water. It should be served immediately, or kept hot, as in a double boiler.

Tests show that water under the boiling point, 212°, is inefficient for coffee brewing, and does not extract the aromatic oils[6]. Used under this temperature, it is a sure cause of weak and insipid flavor. The effort to make up this deficiency by longer contact of coffee and water, or repeated pouring through, results in no extraction of the oils, but draws out undesirable elements, such as coffee-tannin, which is soluble in water at any temperature and is governed by the time of contact.

Coffee-tannin, which is not the commercial tannic acid, is eliminated to practically nothing in the quick brewing methods.

The chemical analysis of brewed coffee shows the following:

	Coffee Tannin per Cup	Comparative Proportions
Percolator method,[7] fine gran. 5 minutes' steeping	2.90 grains	
Boiling Method, medium "	2.35 "	
Steeping Method, " "	2.31 "	
Filtration (or Drip) Method } Pulverized	0.20 "	-

Brewing is the final manufacturing process of coffee. All previous perfection is dependent upon it. Like food products which lose nutritive value by bad cooking, coffee loses its best values by wrong brewing. Brewed by the very simple correct methods, it is an unfailingly clear, fragrant, taste-charming beverage, universally loved and scientifically approved.

The committee made a further report in 1914, and some of the findings were subsequently published in an association booklet called *The Coffee Book*, used in connection with the second National Coffee Week campaign in 1915. In it were these:

GRINDING DEFINITIONS

Powdered Like — flour	*Pulverized* Like — not coarser than fine corn meal.
Very Fine and Fine Like — from corn meal to fine granulated sugar.	*Medium* Like — coarse granulated sugar.

Also, the committee emphasized its previous findings, particularly this one: "Filter bags should be kept in cold water when not in use. Drying causes decomposition. Keeps sweet if kept wet. Use muslin for filter bag and pulverized granulation."

The association brought out this same year, on recommendation of the committee, its Home coffee mill, an "ideal and standard coffee mill for home use." It was a wall mill equipped with a glass-front metal hopper and employing a ratchet spring-lock nut and double-action grinders. The mill was later improved with an all-glass hopper and a tumbler bracket. More than 20,000 of these mills have been sold.

[6] In 1921, Professor S. C. Prescott, in charge of the research work for the Joint Coffee Trade Publicity Committee at the Massachusetts Institute of Technology, said that a brew made with the water considerably below the boiling point, was preferable.

[7] Meaning the pumping percolator.

At the suggestion of the author, the efficiency of nine different coffee-making devices (including boiling and drip pots, pumping percolators, cloth and paper filters) was investigated in the laboratories of the Mellon Institute of Industrial Research of the University of Pittsburgh in 1915; and Dr. Raymond F. Bacon submitted a report that showed that the boiling method produced the highest percentage of caffetannic acid and caffein; the French drip process the lowest. The investigation disclosed also a more palatable brew at 195° to 200° F. than at the boiling point.

Another notable contribution to the science of coffee brewing was made by the Home Economics Laboratories of the University of Kansas in 1916. The experiments extended over one year. They showed that strength and color in coffee brews are independent of blend and price and are most fully obtained by pulverized granulation, which was found to be the most efficient; that the consumer pays for flavor and that filtration yielded the best brew. The French drip, or true percolator, did not figure in these experiments.

At the 1915 convention of the National Coffee Roasters Association, Mr. Aborn reported that 4,000 copies of the committee's findings on grinding and brewing had been given away; and the facts were further circulated in 2,000,000 booklets issued during two years. He told of tests which showed that while there might be reasons of commercial expediency for packing ground coffee, it could not be defended as a quality principle; also that plate-grinders produced a more efficient drawing granulation than roller grinders, and that the idea that the steel-cut process eliminates dirt was an absurdity, as "the finest ground coffee is not dirt but coffee in its most efficient drawing condition." He added, "I have paid no attention to chaff removal in these tests as the uselessness of such removal has been repeatedly shown up." The reference here was to his 1914 and 1913 reports, in which it was stated that "removing the chaff in the steel-cut process does not remove any of the tannin, and for this purpose the steel-cut process is wholely futile, and a wasteful and unnecessary tax upon cost", and that "the removal of the chaff appreciably affects the flavor and depreciates the cup value."

This report repeated previous findings against the pumping percolator as produc-

ing an inefficient brew and being a very faulty utensil. Mr. Aborn concluded his report by saying:

> The old time boiling method has fewer and fewer defenders and holds its own only as a superstition. I therefore pass it over as a discarded issue . . . It is but repetition of former reports for me to say that pulverized granulation is the most efficient granulation; that it assures the highest quality of brew and the lowest proportion of coffee to a given strength; that it is the most saving and most satisfying grinding for all to use; that it (the coffee) must be fresh ground; that the filtration method is the most correct in fundamental principles and that used with a muslin bag it assures the consumer coffee of the purest, finest flavored quality, highest health value and sure economy.

The campaign of education was continued during 1916, producing encouraging results among schools, colleges, the medical fraternity, newspapers, with the trade and the consumer. It marked the first big constructive work combining the practical and scientific phases of grinding and brewing methods. In his report at the 1916 convention of the National Coffee Roasters Association, Mr. Aborn reviewed the four years work, and pointed out what had been accomplished. He told of a new booklet, to be called the *True Book on Coffee Grinding and Brewing,* and an educational exhibit box for schools about to be issued. Due to opposition which developed from trade interests that were putting out steel-cut and other grinds of coffee not favored by the committee, and also because many members thought the association should not exploit any particular method of grinding or brewing, it was decided to make no further publication of the coffee grinding and brewing conclusions of the committee until they had been confirmed by laboratory research.

Boiling and filtration tests in the mountains of the Yellowstone Park by W. H. Aborn in 1916 showed that the limit of coffee brewing was reached at an altitude of nine thousand feet.

At the 1916 meeting, Dr. Floyd W. Robison of the Detroit Testing Laboratories, read a notable paper entitled "What do we know about coffee?," which hailed coffee as a food product, warned the roasters to beware of half-facts, and urged the importance of a research laboratory. It was published and given distribution by the association.

The educational exhibit box showing samples of coffee from plantation to cup, including five different grinds, was issued in 1917, and sold for one dollar.

The Better Coffee Making Committee also published in this year a booklet entitled *Coffee Grinding and Brewing* in which it summarized its work to date, and presented its special plea for cotton-cloth filters as the ideal coffee-making device.

This booklet aroused considerable discussion, particularly between those who favored the paper filter and those who, with Mr. Aborn, believed cotton cloth, such as muslin, to be the most efficient strainer. "Cotton", argued Mr. Aborn, "is an ideal sanitary strainer because it contains no chemical or questionable manufacturing element."

It was pointed out by Dr. Floyd W. Robison that while cotton cloth, such as muslin, does give a fairly clear coffee, it is not so clear as by the methods where a filter paper is used. He said:

> Both methods have serious objectionable features. The muslin bag, particularly, is decidedly unsanitary, especially when used in restaurants and hotels. It is rarely kept clean, and one who has frequented restaurants and many hotel kitchens knows that it lends itself to very unclean and unsightly methods of handling. The food inspector has to check this up perhaps as often as any one feature about a restaurant.
>
> The objection to the filter paper is not at all on the ground of sanitation. It is ideal in this respect. The claim is made, and at least, in part, substantiated, that it does hold back valuable features of the brew.
>
> There are many points about the filter that have not been considered at all. Mr. Calkin believes that the very best type of filter is a bed of coffee itself, and I must say this has the sanction of good laboratory experience.

I. D. Richheimer[8], attacking the cotton cloth filter, said:

> It is a known fact that the fats in coffee are very dense and represent twelve to fifteen percent of the coffee weight. These fats — due to the simplest chemical action of contact with air, moisture and continued heat — begin a fermentation in the completed beverage. In the cloth-filtering process — due to the rapid passage of water through grounds almost as quickly as poured — the largest percentage of fats is carried into the beverage. Fat being lighter than water rises to the top of water if given a certain amount of time during the brewing process. Were there no fats (which ferment) in coffee there would be no need for placing cloth-filtering material under water, as suggested, to keep them from becoming sour.

In the booklet referred to, Mr. Aborn

[8] *Tea and Coffee Trade Jour.*, 1917 (vol. xxxiii: no. 5: pp. 339-40).

expressed himself as follows on the filtration method:

The filtration method is not new, but well tried, thoroughly proven and long used, though often incorrectly. It is the method followed, more or less correctly, by all of the first-class hotels in the world. It is controlled by no patent or proprietary device, and requires a most inexpensive equipment. For a perfect result it but demands an accurate adherence to simple but vital principles. Deviations from these fundamentals, though apparently slight, cause failure. When they, and the necessary *exact* following of them, are clearly understood, any person, even a small child, can brew coffee with unvarying success.

The first point to consider in filtration is the dimensions of the filter bag, or container of the ground coffee, in relation to the quantity of coffee used and the granulation of same. If the filter be a muslin bag, free on all sides, the filtering surface is considerable and permits the necessary quick passage of water through the grounds, provided the bag is of a wide enough diameter as to prevent too great a depth of grounds through which the water cannot quickly penetrate. The error of too narrow a filter is a common one. It causes a delayed filtration, which means undesirably long contact of water and coffee and also the cooling of the liquid which in a correct, undelayed filtration is smoking hot at completion. The bag should also not be too long or be allowed to hang or soak in the liquid. A filter bag set tightly into a pot against its sides, thus surrounded with impenetrable walls, is greatly reduced in filtering surface, and the filtration is thereby slackened.

The filter material should not be too coarse in texture, like cheese cloth, or too heavy and impenetrable, like very heavy muslin. A moderate weight muslin, not too light, is efficient.

The degree of granulation also, of course, affects the rate of flow. The coarser the grind the faster the flow, which permits a larger quantity of coffee to a given diameter of filter bag.

A most frequent fault in the use of the filtration method is the failure to understand the fine degree of grinding necessary to the best results. When the grind is not sufficiently fine the extraction is, of course, weak. A fine grind (like fine cornmeal) is essential. It does not retard the flow if the filter is of right dimensions. A powdered grind (like flour) is so fine that it is apt to "mat" itself into a resisting floor.

Many users of the filtration method pour the liquid through more than once. This gains some added color, but adds undesirable element, depreciates flavor and is especially inadvisable when the grind is sufficiently fine. *One pouring* only is recommended for the best results.

The chinaware, or glazed earthenware pot, sometimes called the French drip pot, with a chinaware or earthenware sieve container for the grounds at the top through which the water is poured, being free of all metal, is inviting in purity and in hygienic merit. Together with the filter bag, it is subject to the above remarks on dimensions. A chinaware sieve cannot be made as fine as a metal sieve and cannot of course hold very fine granulation as can cotton cloth. More coffee for a given strength is, therefore, required. The upper container should be wide enough, for a given quantity of coffee, as to allow an unretarded flow, and the more openings the strainer contains the better.

In any drip, filtration or percolating method the stirring of the grounds causes an over-contact of water and coffee and results in an overdrawn liquor of injured flavor. If the water does not pass through the grounds readily, the fault is as above indicated and cannot be corrected by stirring or agitation. Many complaints of bitter taste are traced to this error in the use of the filtration method.

It is not necessary to pour on the water in driblets. The water may be poured slowly, but the grounds should be kept well covered. The weight of the water helps the flow downward through the grounds. Care should be taken to keep up the temperature of the water. Set the kettle back on the stove when not pouring. If the water is measured, use a small heated vessel, which fill and empty quickly without allowing the water to cool.

In 1917, *The Tea and Coffee Trade Journal* made a comparative coffee-brewing test with a regulation coffee pot for boiling, a pumping percolator, a double glass filtration device, a cloth-filter device, and a paper filter device. The cup tests were made by E. M. Frankel, Ph.D.; and William B. Harris, coffee expert, United States Department of Agriculture. The brews were judged for color, flavor (palatability, smoothness), body (richness), and aroma. The test showed that the paper filtration device produced the most superior brew. The cloth-filter, glass-filter, percolator, and boiling pot followed in the order named.

At the 1917 convention of the National Coffee Roasters Association, John E. King, of Detroit, announced that laboratory research which he had had conducted for him showed that the finer the grind, the greater the loss of aroma, and so he had selected a grind containing ninety percent of very fine coffee and ten percent of a coarser nature, which seemed to retain the aroma. He subsequently secured a United States patent for this grind. Mr. King announced also at this meeting that his investigations showed there was more than a strong likelihood that the much-discussed caffetannic acid did not exist in coffee — that it most probably was a mixture of chlorogenic and and coffalic acids.

The World War operated to interfere with the coffee roasters' plans for a research bureau; and in the meantime the Brazil planters, in 1919, started their million-

dollar advertising campaign in the United States, co-operating with a joint committee representing the green and roasted coffee interests. In the following year (June, 1920), this committee arranged with the Massachusetts Institute of Technology to start scientific research work on coffee, the literature of the roasters' Better Coffee Making Committee being turned over to it; and the Institute began to "test the results of the committee's work by purely analytical methods."

The first report on the research work at the Massachusetts Institute of Technology was made by Professor S. C. Prescott to the Joint Coffee Trade Publicity Committee in April, 1921. The committee gave out a statement saying that Prof. Prescott's report stated that "caffein, the most characteristic principle of coffee, is, in the moderate quantities consumed by the average coffee drinker, a safe stimulant without harmful after-effects."

There was no publication of experimental results; but the announced findings were, in the main, a confirmation of the results of previous workers, particularly of Hollingworth, with whose statement, that "caffein, when taken with food in moderate amount is not in the least deleterious," the report was quoted as being in entire agreement.

At the annual convention of the National Coffee Roasters Association, November 2, 1921, Professor Prescott made a further report, in which he stated that investigations on coffee brewing had disclosed that coffee made with water between 185° and 200° was to be preferred to coffee made with the water at actual boiling temperature (212°), that the chemical action was far less vigorous, and that the resulting infusion retained all the fine flavors and was freer from certain bitter or astringent flavors than that made at the higher temperature. Professor Prescott announced also that the best materials for coffee-making utensils were glass (including agate-ware, vitrified ware, porcelain, etc.), aluminum, nickel or silver plate, copper, and tin plate, in the order named[9].

The Joint Coffee Trade Publicity Committee's booklet on *Coffee and Coffee Making*, issued in 1921, was very guarded in its observations on grinding and brewing. It avoided all controversial points, but it did go so far as to say on the general subject of brewing:

> Chemists have analyzed the coffee bean and told us that the only part of it which should go into our coffee cups for drinking is an aromatic oil. This aromatic element is extracted most efficiently only by fresh boiling water. The practice of soaking the grounds in cold water, therefore, is to be condemned. It is a mistake also to let the water and the grounds boil together after the real coffee flavor is once extracted. This extraction takes place very quickly, especially when the coffee is ground fine. The coarser the granulation the longer it is necessary to let the grounds remain in contact with the boiling water. Remember that flavor, the only flavor worth having, is extracted by the *short* contact of boiling water and coffee grounds and that after this flavor is extracted, the coffee grounds become valueless dregs.

The report contained also the following helpful generalities on coffee service and the various methods of brewing in more or less common use in the United States in 1921:

> Although the above rules are absolutely fundamental to good Coffee Making, their importance is so little appreciated that in some households the lifeless grounds from the breakfast Coffee are left in the pot and resteeped for the next meal, with the addition of a small quantity of fresh coffee. Used coffee grounds are of no more value in coffee making than ashes are in kindling a fire.
>
> After the coffee is brewed the true coffee flavor, now extracted from the bean, should be guarded carefully. When the brewed liquid is left on the fire or overheated this flavor is cooked away and the whole character of the beverage is changed. It is just as fatal to let the brew grow cold. If possible, coffee should be served as soon as it is made. If service is delayed, it should be kept hot but not overheated. For this purpose careful cooks prefer a double boiler over a slow fire. The cups should be warmed beforehand, and the same is true of a serving pot, if one is used. Brewed coffee, once injured by cooling, cannot be restored by reheating.
>
> Unsatisfactory results in coffee brewing frequently can be traced to a lack of care in keeping utensils clean. The fact that the coffee pot is used only for coffee making is no excuse for setting it away with a hasty rinse. Coffee making utensils should be cleansed after each using with scrupulous care. If a percolator is used pay special attention to the small tube through which the hot water rises to spray over the grounds. This should be scrubbed with the wire-handled brush that comes for the purpose.
>
> In cleansing drip or filter bags use cool water. Hot water "cooks in" the coffee stains. After the bag is rinsed keep it submerged in cool water until time to use it again. Never let it dry. This treatment protects the cloth from the germs in the air which cause souring. New filter bags should be washed before using to remove the starch or sizing.

[9] *Tea and Coffee Trade Jour.*, 1921 (vol. xli: no. 5: p. 688).

DRIP (OR FILTER) COFFEE. The principle behind this method is the quick contact of water at full boiling point with coffee ground as fine as it is practical to use it. The filtering medium may be of cloth or paper, or perforated chinaware or metal. The fineness of the grind should be regulated by the nature of the filtering medium, the grains being large enough not to slip through the perforations.

The amount of ground coffee to use may vary from a heaping teaspoonful to a rounded tablespoonful for each cup of coffee desired, depending upon the granulation, the kind of apparatus used and individual taste. A general rule is the finer the grind the smaller the amount of dry coffee required.

The most satisfactory grind for a cloth drip bag has the consistency of powdered sugar and shows a slight grit when rubbed between thumb and finger. Unbleached muslin makes the best bag for this granulation. For dripping coffee reduced to a powder, as fine as flour or confectioner's sugar, use a bag of canton flannel with the fuzzy side in. Powdered coffee, however, requires careful manipulation and cannot be recommended for everyday household use.

Put the ground coffee in the bag or sieve. Bring fresh water to a full boil and pour it through the coffee at a steady, gradual rate of flow. If a cloth drip bag is used, with a very finely ground coffee, one pouring should be enough. No special pot or device is necessary. The liquid coffee may be dripped into any handy vessel or directly into the cups. Dripping into the coffee cups, however, is not to be recommended unless the dripper is moved from cup to cup so that no one cup will get more than its share of the first flow, which is the strongest and best.

The brew is complete when it drips from the grounds, and further cooking or "heating up" injures the quality. Therefore, since it is not necessary to put the brew over the fire, it is possible to make use of the hygienic advantages of a glassware, porcelain or earthenware serving pot.

BOILED (OR STEEPED) COFFEE. For boiling (or steeping) use a medium grind. The recipe is a rounded tablespoonful for each cup of coffee desired or — as some cooks prefer to remember it — a tablespoonful for each cup and "one for the pot." Put the dry coffee in the pot and pour over it fresh water *briskly boiling*. Steep for five minutes or longer, according to taste, over a low fire. Settle with a dash of cold water or strain through muslin or cheesecloth and serve at once.

PERCOLATED COFFEE. Use a rounded tablespoonful of medium fine ground coffee to each cupful of water. The water may be poured into the percolator cold or at the boiling point. In the latter case, percolation begins at once. Let the water percolate over the grounds for five or ten minutes depending upon the intensity of the heat and the flavor desired.

In response to a request by the author, Charles W. Trigg has contributed the following discussion of coffee making:

VARIOUS ASPECTS OF SCIENTIFIC COFFEE BREWING

Before converting it into the beverage form, coffee must be carefully selected and blended, and skillfully roasted, in order thus far to assure obtaining a maximum efficiency of results. No matter how accurately all this be done, improper brewing of the roasted bean will nullify the previous efforts and spoil the drink; for roasted coffee is a delicate material, very susceptible to deterioration and of doubtful worth as the source of a beverage unless properly handled.

There probably never was produced a drink which so fits into the exacting desires of the human appetite as does coffee. Properly prepared, it is a delightful beverage: but incorrectly made, it becomes an imposition upon the palates of mankind. Sensitive though coffee is to improper manipulation, the best procedure for brewing it is also the easiest. Cheap coffee well made excels good coffee poorly made.

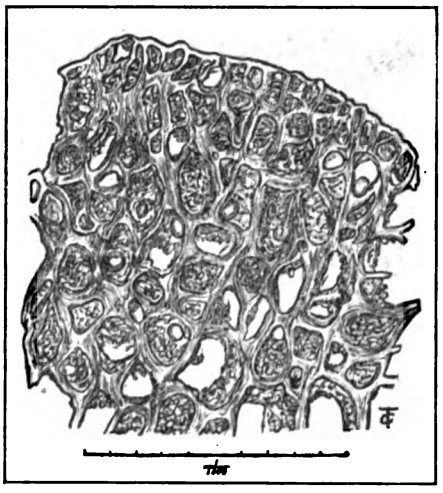
CONSTITUENT CONCEPTS. The roasting of green coffee causes an alteration in the constitution of its constituents, with the result that some of the compounds present therein which were originally water-soluble are rendered insoluble, and some which were insoluble are converted into soluble ones. A portion of the original caffein content is lost by sublimation. The aromatic conglomerate, caffeol, is formed, and a considerable quantity of gas is produced, a portion of which, developing pressure in the cells of the beans, pops, or swells, them so as to increase the size of each individual bean. The constitutents which are water-soluble after the torrefaction may be generally classified as heavy extractives and light aromatic materials. The percentages and nature of these materials in the roasted coffee will vary with the type of coffee and with the roast which it is given. In general, and in particular for purposes of comparison of methods of brewing, they may be considered to be the same and to occur in about the same proportions in all coffees.

The heavy extractives are caffein, mineral matter, proteins, caramel and sugars, "caffetannic acid", and various organic materials of uncertain composition. Some fat will also be found in the average coffee brew, being present not by virtue of being water soluble, but because it has been melted from the bean by the hot water and carried along with the solution.

The caffein furnishes the stimulation for which coffee is generally consumed. It has only a slightly bitter taste, and because of the relatively small percentage in which it is present in a cup of coffee, does not contribute to the cup value. The mineral matter, together with certain decomposition and hydrolysis products of crude fiber and chlorogenic acid, contribute toward the astringency or bitterness of the cup. The proteins are present in such small quantity that their only rôle is to raise somewhat the almost negligible food value of a coffee infusion. The body, or what might be called the licorice-like character of coffee, is due to the presence of bodies of a glucosidic nature and to caramel.

As has been previously pointed out[10], the term "caffetannic acid" is a misnomer; for the sub-

[10] See chapter XVII.



SECTION OF ROASTED BEAN MAGNIFIED 1,000 TIMES

stances which are called by this name are in all probability mainly coffalic and chlorogenic acids. Neither is a true tannin, and they evince but few of the characteristic reactions of tannic acid. Some neutral coffees will show as high a "caffetannic acid" content as other acid-charactered ones. Careful work by Warnier [11] showed the actual acidities of some East Indian coffees to vary from 0.013 to 0.033 per cent. These figures may be taken as reliable examples of the true acid content of coffee, and though they seem very low, it is not at all incomprehensible that the acids which they indicate produce the acidity in a cup of coffee. They probably are mainly volatile organic acids together with other acidic-natured products of roasting.

We know that very small quantities of acid are readily detected in fruit juices and beer, and that variation in their percentages is quickly noticed, while the neutralization of this small amount of acidity leaves an insipid drink. Hence it seems quite likely that this small acid content gives to the coffee brew its essential acidity. A few minor experiments on neutralization have proven the production of a very insipid beverage by thus treating a coffee infusion. So that the acidity of certain coffees most apparently should be attributed to such compounds, rather than to the misnamed "caffetannic acid."

The light aromatic materials, and the other substances which are steam-distillable, i. e., which are driven off when coffee is concentrated by boiling, are the main determining factors in the individuality of coffees. These compounds, which are collectively called "caffeol", vary greatly in the percentages present in different coffees, and thus are largely responsible for our ability to distinguish coffees in the cup. It is these compounds which supply the pleasingly aromatic and appetizing odor to coffee.

All of these compounds, with the possible exception of the proteins, are easily soluble in both hot and cold water. The fact that a clear coffee extract made with hot water does not show any precipitate immediately upon cooling, proves that cold water will give as complete an extraction as hot water. However, speed of extraction is materially increased with rise in temperature, due to the fact that the rate and degree of solubility of the substances in water, and the diffusion of the water through the cell walls of the coffee, are accelerated. Also, the resistance which the fat content of the bean offers to the wetting of the coffee, and the persistency of the "enfleurage" action of the fat in retaining the caffeol, are less with hot than with cold water. Accordingly, the speed of extraction is increased by using hot water, and the efficiency of extraction procured per unit time of subjection to water is higher.

Prolonged contact of coffee with water results in the hydrolysis of some of the insoluble materials and subsequent extraction of the substances thus formed. The rate of hydrolysis also increases with temperature; and as these compounds are of an astringent or bitter nature, the solution obtained upon boiling coffee is naturally possessed of a flavor unpleasant to the palate of the connoisseur. Boiling of the coffee infusion after it has been removed from the grounds also has a deleterious effect, as the local overheating of the solution at the point of application of the heat results in a decomposition, particularly if the solution be converted into steam at this point, leaving a thin film of solids temporarily exposed to the destructive action of the heat. Some of the more delicate constituents are unfavorably affected by such treatment, and undergo hydrolysis and oxidation. The products thus formed are thrown into relief in the flavor by the loss of the aromatic properties through steam distillation which is incidental to boiling.

It is a well known fact that re-warming a coffee brew has a unfavorable effect upon it. This is probably due in part to a precipitation of some of the water-soluble proteins upon standing, and their subsequent decomposition when heat is applied directly to them in reheating the solution. The absorption of air by the solution upon cooling, with attendant oxidation, which is accentuated by the application of heat in re-warming, must also be considered, as well as the other effects of boiling as set forth, and the action of the materials of which the coffee pot is constructed upon the solution.

PHYSICAL CONCEPTION. The coffee bean is composed of a large number of cells which function as natural containers and retainers of coffee fat and of the aromatic flavoring substances. In order to render the soluble solids fully accessible, the resistance which these cells offer to the extracting water must be overcome by grinding so as to break open all of them. In this manner a grind is obtained which will give a maximum removal of the heavy extractives. But when all of the cells are broken, great opportunity is offered for the escape of the caffeol, which is further enhanced by the slight heating which usually accompanies such fine grinding. So much caffeol escapes that even our most expert cup-testers would experience difficulty in identifying powdered coffees in a blind test. What

[11] *Pharm. Weekbl. voor Nederl*, No. 13, 1899. *Apoth. Ztg.*, 1899 (p. 14).

cup-testers, in fact, use powdered coffees for making their cup selections?

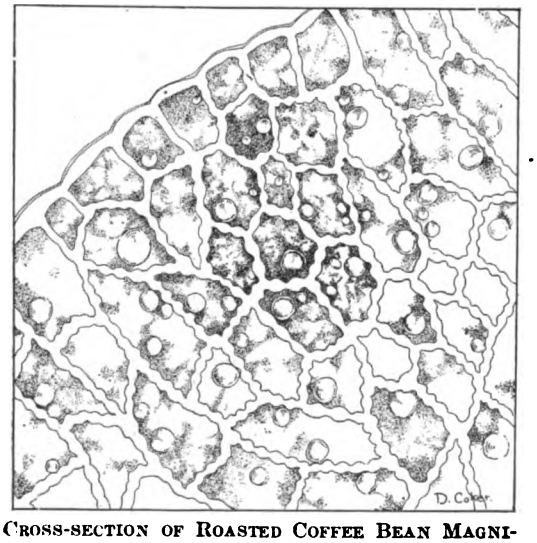
Consider powdered coffee, compared with freshly ground coffee of a coarser grind. Neither the former nor its brew possesses the amount of characteristic flavor or aroma, attributable to caffeol, evidenced by the latter. The explanation of this is that the finer the grind, the more readily accessible are the soluble constituents of the coffee to the extracting water. Caffeol, however, in addition to being water-soluble, is extremely fugacious, so that when the grinding is carried to such a fineness that every cell is broken, the greater part of the caffeol volatilizes before the water comes into contact with it. It is therefore highly desirable that a grind be used wherein all of the cells are not broken, but a grind that is sufficiently fine to permit efficient extraction. In the light of this knowledge, the grind advocated by King[12] seems to be logical, for with it — though neither a maximum of the non-volatile extractives nor a maximum of caffeol is obtained — an all-round maximum of cup quality is procured.

The escape, upon grinding, of these volatile aromatic and flavoring constituents which lend individuality to coffees, makes it essential that the roasted beans be ground immediately prior to extraction.

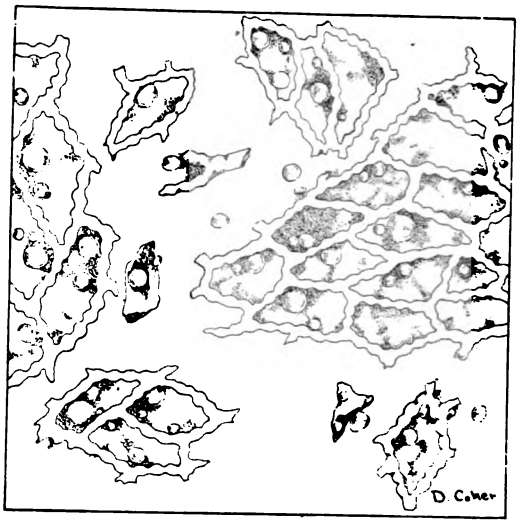
DIFFERENT METHODS OF EXTRACTION. The methods employed for preparing the coffee drink may be classified under the general headings of boiling, steeping, percolation, and filtration. True percolation is the simple process known by the trade as filtration; but in this classification, the term indicates the style of extraction exemplified by the pumping percolator.

Boiled coffee is usually cloudy, due to the suspension of fine particles resulting from the disintegration of the grounds by the violence of boiling. The usual procedure in clarifying the decoction is to add the white of an egg or some egg-shells, the albumen of which is coagulated upon the fine particles by the heat of the solution, and the particles thus weighted sink to the bottom. Even this procedure, requiring much attention, does not give as clear a solution as some of the other extraction procedures employed. The conditions to which coffee is subjected during boiling are the worst possible, as both grounds and solution undergo hydrolysis, oxidation, and local-overheating, while the caffeol is steam-distilled from the brew. Many persons, who have long been accustomed to drinking the relatively bitter beverage thus produced, are not satisfied by coffee made in any other way; but this is purely a perversion of taste, for none of the properties are present which make coffee so prized by the epicure.

[12] *Tea and Coffee Trade Jour.*, 1917 (vol. xxxiii: pp. 552-55).



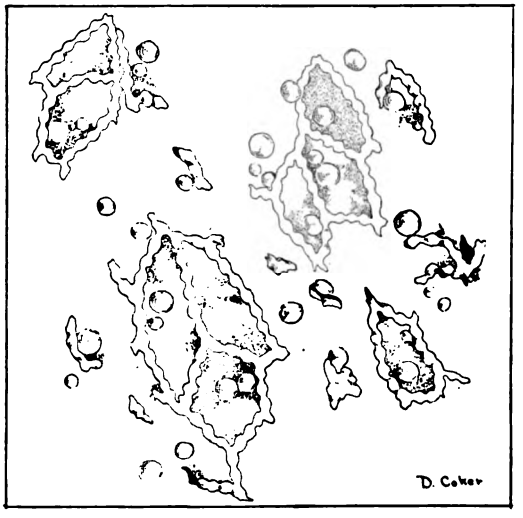
CROSS-SECTION OF ROASTED COFFEE BEAN MAGNIFIED 600 TIMES



COARSE GRIND UNDER THE MICROSCOPE

Steeping, in which cold water is added to the coffee, and the mixture brought up to a boil, does not subject the coffee to so strenuous conditions. Local overheating and hydrolysis occur, but not to so great an extent as in boiling; and most of the effects of oxidation and volatization of caffeol are absent. However, extraction is rather incomplete, due to lack of thorough admixture of the water and coffee.

When coffee is to be made under the best conditions, the temperature of the water used and of the extract after it is made should not fluctuate. In the pumping percolator, as in the steeping method, the temperature varies greatly from the time the extraction is started to the completion of the operation. This is deleterious. Also, local overheating of the infusion occurs at the point of application of the heat; and because of the manner in which the water is brought into contact with the coffee, the degree of extraction shows inefficiency. Spraying of the water over the coffee never permits the grounds to be completely covered with water at any one time, and the opportunity offered for channeling is excessive. The principle of thorough extraction demands that, as the substance being extracted becomes progressively more exhausted, fresh solvent should be brought into contact with it. In the pumping percolator the solution



MEDIUM GRIND UNDER THE MICROSCOPE

pumped over the grounds becomes more concentrated as the grounds become exhausted; so that the time taken to reach the degree of extraction desired is longer, and an appreciable amount of relatively concentrated liquor is retained by the grounds.

The simplest procedure to follow is that in which boiling water is poured over ground coffee suspended on a filtering medium in such a manner that the extracting water will slowly pass through the coffee and be received in a containing vessel, which obviates further contact of the beverage with the grounds. The water as it comes into contact with the ground coffee extracts the soluble material, and the solution is removed by gravity. Fresh water takes its place; so that, if the filter medium be of the proper fineness, the water flows through at the correct rate of speed, and complete extraction is effected with the production of a clear solution. Thus a maximum extraction of desirable materials is obtained in a short time with a minimum of hydrolysis, oxidation, and loss of caffeol; and if the infusion be consumed at once, or kept warm in a contrivance embodying the double-boiler principle, the effects of local overheating are avoided. Also, with the use of an appropriate filter, a finer grind of coffee can be used than in the other devices, without obtaining a turbid brew. All this works toward the production of a desirable drink.

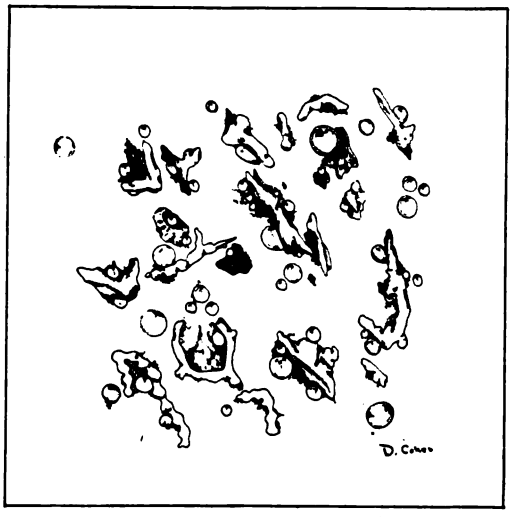
There are several devices on the market, some using paper, and some cloth, as a filter, which operate on this principle and give very good coffee. The use of paper presents the advantage of using a new and clean filter for each brew, whereas the cloth must be carefully kept immersed in water between brews to prevent its fouling.

Contrivances operating on the filtration principle have been designed for use on a large scale in conjunction with coffee urns, and have proven quite successful in causing all of the water to go slowly through the coffee without channeling, thus accomplishing practically complete extraction. The majority of urns are still operated with bags, of which the ones with sides of heavier material than the bottom obtain the most satisfactory results, as the majority of the water must pass through the coffee instead of out through the sides of the bag. Greatest efficiency, when bags are used, is obtained by repouring until all of the liquid has passed twice through the coffee; further repouring extracts too much of the astringent hydrolysis products. The bags, when not in use, should not be allowed to dry but should be kept in a jar of cold water. The urns provided with water jackets keep the brew at almost a constant temperature and avoid the deterioration incident to temperature fluctuation.

COMPOSITION OF BREWS. The real tests of the comparative values of different methods of brewing are the flavor and palatibility of the drink, in conjunction with the number of cups of a given strength which are produced, or the relative strengths of brews of the same number of cups volume. Chemical analysis has not yet been developed to a stage where the results obtained with it are valuably indicative. Caffeol is present in quantities so small that no comparative results can be obtained. "Caffetannic acid" determinations are practically meaningless. This compound is of so doubtful a composition and physiological action, and the methods employed for its determination are so indefinite as to interpretation, as to render valueless any attempts at comparison of relative percentages. The only accurate analysis which can be made is that for caffein.

Much advertising emphasis has been placed on the small amount of caffein extracted by some devices. What is one of the main reasons for the consumption of coffee? The caffein contained therein, of course. So that if one device extracts less caffein than another, that fact alone is nothing in favor of the former. If the consumer does not want caffein in his drink there are caffein-free coffees on the market.

The coffee liquor acts on metals in such a manner as to lower the quality of the drink, so



FINE-MEAL GRIND UNDER THE MICROSCOPE

that metals of any sort, and by all means, irons, should be avoided as far as possible. Instead, earthenware or glass, preferably a good grade of the former, should be employed as far as possible in the construction of coffee-making devices.

Of the various metals, silver, aluminum, monel metal, and tin (in the order named) are least attacked by coffee infusions; and besides these, nickel, copper, and well enameled iron (absolutely free from pin holes) may be used without much danger of contamination. Rings for coffee-urn bags should be made of tinned copper, monel metal, or aluminum. Even if coffee be made in metal contrivances, the receptacles in which it stands should be made of earthenware or of glass.

Painstaking care should be given to the preservation of the coffee-makers in a state of cleanliness, as upon this depends the value of the brew. Dirt, fine grounds, and fat (which will turn rancid quickly) should not be allowed to collect on the sides, bottom, or in angles of the device difficult of access. Nor should any source of metallic or exterior contamination be allowed to go uneliminated.

The Perfect Cup of Coffee

Lovers of coffee in the United States are in a better position to obtain an ideal cup of the beverage than those in any other country. While imports of green coffee are not so carefully guarded as tea imports, there is a large measure of government inspection designed to protect the consumer against impurities, and the Department of Agriculture is zealous in applying the pure food laws to insure against misbranding and substitution. The department has defined coffee as "a beverage resulting from a water infusion of roasted coffee and nothing else."

Today no reputable merchant would think of selling even loose coffee for other than what it is. And the consumer can feel that, in the case of package coffee, the label tells the truth about the contents.

With a hundred different kinds of coffee coming to this market from nineteen countries, so many combinations are possible, that there is sure to be a straight coffee or a blend to suit any taste. And those who may have been frightened into the belief that coffee is not for them should do a little experimenting before exposing themselves to the dangers of the coffee-substitute habit.

Once upon a time it was thought that Java and Mocha were the only worth-while blend, but now we know that a Bogota coffee from Colombia, and a Bourbon Santos from Brazil, make a most satisfying drink. And if the individual seeker should happen to be a caffein-sensitive, there are coffees so low in caffein content, like some Porto Ricans, as to overcome this objection; while there are other coffees from which the caffein has been removed by a special treatment. There is no reason why any person who is fond of coffee should forego its use. Paraphrasing Makaroff, Be modest, be kind, eat less, and think more, live to serve, work and play and laugh and love — it is enough! Do this and you may drink coffee without danger to your immortal soul.

If you are accustomed to buying loose coffee, have your dealer do a little experimental blending for you until you find a coffee to suit your palate. Some expert blends are to be found among the leading package brands. But you really can not do better than to trust your case to a first-class grocer of known reputation. He will guide you right if he knows his business; and if he doesn't, then he doesn't know his business — try elsewhere. Test him out along this line:

Let us reason together, Mr. Grocer. Let us consider these facts about coffee: green coffee improves with age? Granted. As soon as it is roasted, it begins to lose in flavor and aroma? Certainly. Grinding hastens the deterioration? Of course. Therefore, it is better to buy a small quantity of freshly roasted coffee in the bean and grind it at the time of purchase or at home just before using? Absolutely!

If your grocer re-acts in this fashion, he need only supply you with a quality coffee at fair price and you need only to make it properly to obtain the utmost of coffee satisfaction.

Some connoisseurs still cling to the good old two-thirds Java and one-third Mocha blend, but the author has for years found great pleasure in a blend composed of half Medellin Bogota, one-quarter Mandheling "Java", and one-quarter Mocha. However, this blend might not appeal to another's taste, and the component parts are not always easy to get. The retail cost (1922) is about fifty cents.

Another pleasing blend is composed of Bogota, washed Maracaibo, and Santos, equal parts. This should retail from thirty to thirty-five cents. Good drinking coffees are to be had for prices ranging from twenty-five to thirty cents. In the stores of one of the large chain systems an excellent blend composed of sixty percent Bourbon Santos,

and forty percent Bogota is to be had (1922) for 29 cents. All these figures apply, of course, to normal times.

If you are epicurean, you will want to read up on, and to try, the fancy Mexicans, Cobans, Sumatra growths, Meridas, and some from the "Kona side" of Hawaii.

In preparing the perfect cup of coffee, then, the coffee must be of good grade, and freshly roasted. It should, if possible, be ground just before using. The author has found a fine grind, about the consistency of fine granulated sugar, the most satisfactory. For general home use, a device that employs filter paper or filter cloth is best; for the epicure an improved porcelain French percolator (drip pot) or an improved cloth filter will yield the utmost of coffee's delights. Drink it black, sweetened or unsweetened, with or without cream or hot milk, as your fancy dictates.

It should be remembered that to make good coffee no special pot or device is necessary. Good coffee can be made with any china vessel and a piece of muslin. But to make it in perfection pains must be taken with every step in the process from roaster to cup.

Hollingworth[13] points out that through taste alone it is impossible to distinguish between quinine and coffee, or between apple and onion. There is something more to coffee than its caffein stimulus, its action on the taste-buds of the tongue and mouth. The sense of smell and the sense of sight play important rôles. To get all the joy there is in a cup of coffee, it must look good and smell good, before one can pronounce its taste good. It must woo us through the nostrils with the wonderful aroma that constitutes much of the lure of coffee.

And that is why, in the preparation of the beverage, the greatest possible care should be observed to preserve the aroma until the moment of its psychological release. This can only be done by having it appear at the same instant that the delicate flavor is extracted — roasting and grinding the bean much in advance of the actual making of the beverage will defeat this object. Boiling the extraction will perfume the house; but the lost fragrance will never return to the dead liquid called coffee, when served from the pot whence it was permitted to escape.

[13] Hollingworth, H. L. and Poffenberger, A. T., Jr. *The Sense of Taste*, 1917 (p. 13).

To recapitulate, with an added word on service, the correct way to make coffee is as follows:

1. Buy a good grade of freshly roasted coffee from a responsible dealer.
2. Grind it very fine, and at home, just before using.
3. Allow a rounded tablespoonful for each beverage cup.
4. Make it in a French drip pot or in some filtration device where freshly boiling water is poured through the grind but once. A piece of muslin and any china receptacle make an economical filter.
5. Avoid pumping percolators, or any device for heating water and forcing it repeatedly through the grounds. Never boil coffee.
6. Keep the beverage hot and serve it "black" with sugar and hot milk, or cream, or both.

Some Coffee Recipes

When Mrs. Ida C. Bailey Allen prepared a booklet of recipes for the Joint Coffee Trade Publicity Committee, she introduced them with the following remarks on the use of coffee as a flavoring agent:

Although coffee is our national beverage, comparatively few cooks realize its possibilities as a flavoring agent. Coffee combines deliciously with a great variety of food dishes and is especially adapted to desserts, sauces and sweets. Thus used it appeals particularly to men and to all who like a full-bodied pronounced flavor.

For flavoring purposes coffee should be prepared just as carefully as when it is intended for a beverage. The best results are obtained by using freshly made coffee, but when, for reasons of economy, it is desirable to utilize a surplus remaining from the meal-time brew, care should be taken not to let it stand on the grounds and become bitter.

When introducing made coffee into a recipe calling for other liquid, decrease this liquid in proportion to the amount of coffee that has been added. When using it in a cake or in cookies, instead of milk, a tablespoonful less to the cup should be allowed, as coffee does not have the same thickening properties.

In some cases, better results are gained if the coffee is introduced into the dish by scalding or cooking the right proportion of ground coffee with the liquid which is to form the base. By this means the full coffee flavor is obtained, yet the richness of the finished product is not impaired by the introduction of water, as would be the case were the infused coffee used. This method is advisable especially for various desserts which have milk as a foundation, as those of the custard variety and certain types of Bavarian Creams, Ice Cream, and the like. The right proportion of ground coffee, which is

generally a tablespoonful to the cup, should be combined with the cold milk or cream in the double-boiler top and should then be scalded over hot water, when the mixture should be put through a very fine strainer or cheese cloth, to remove all grounds.

Coffee can be used as a flavoring in almost any dessert or confection where a flavoring agent is employed.

On iced coffee and the use of coffee in summer beverages in general, Mrs. Allen writes as follows:

ICED COFFEE. This is not only a delicious summer drink, but it also furnishes a mild stimulation that is particularly grateful on a wilting hot day. It may be combined with fruit juices and other ingredients in a variety of cooling beverages which are less sugary and cloying than the average warm weather drink and for that reason it is generally popular with men.

Coffee that is to be served cold should be made somewhat stronger than usual. Brew it according to your favorite method and chill before adding sugar and cream. If cracked ice is added make sure the coffee is strong enough to compensate for the resulting dilution. Mixing the ingredients in a shaker produces a smoother beverage topped with an appetizing foam.

It is a convenience, however, to have on hand a concentrated syrup from which any kind of coffee-flavored drink may be concocted on short notice and without the necessity of lighting the stove. Coffee left over from meals may be used for the same purpose, but it should be kept in a covered glass or china dish and not allowed to stand too long. A coffee syrup made after the following recipe will keep indefinitely and may be used as a basis for many delicious iced drinks:

COFFEE SYRUP. Two quarts of very strong coffee; 3½ pounds sugar. The coffee should be very strong, as the syrup will be largely diluted. The proportion of a pound of coffee to one and three-fourths quarts of water will be found satisfactory. This may be made by any favorite method, cleared and strained, then combined with the sugar, brought to boiling point, and boiled for two or three minutes. It should be canned while boiling, in sterilized bottles. Fill them to overflowing and seal as for grape juice or for any other canned beverage.

A COFFEE CHRONOLOGY

Giving dates and events of historical interest in legend, travel, literature, cultivation, plantation treatment, trading, and in the preparation and use of coffee from the earliest time to the present

900* — Rhazes, famous Arabian physician, is first writer to mention coffee under the name *bunca* or *bunchum*.†

1000* — Avicenna, Mahommedan physician and philosopher, is the first writer to explain the medicinal properties of the coffee bean, which he also calls *bunchum*.†

1258* — Sheik Omar, disciple of Sheik Schadheli, patron saint and legendary founder of Mocha, by chance discovers coffee as a beverage at Ousab in Arabia.†

1300* — The coffee drink is a decoction made from roasted berries, crushed in a mortar and pestle, the powder being placed in boiling water, and the drink taken down, grounds and all.

1350* — Persian, Egyptian, and Turkish ewers made of pottery are first used for serving coffee.

1400 - 1500 — Earthenware or metal coffee-roasting plates with small holes, rounded and shaped like a skimmer, come into use in Turkey and Persia over braziers. Also about this time appears the familiar Turkish cylinder coffee mill, and the original Turkish coffee boiler of metal.

1428 - 48 — Spice grinder to stand on four legs first invented; subsequently used to grind coffee.

1454* — Sheik Gemaleddin, mufti of Aden, having discovered the virtues of the berry on a journey to Abyssinia, sanctions the use of coffee in Arabia Felix.

1470 - 1500 — The use of coffee spreads to Mecca and Medina.

1500 - 1600 — Shallow iron dippers with long handles and small foot-rests come into use in Bagdad and in Mesopotamia for roasting coffee.

1505* — The Arabs introduce the coffee plant into Ceylon.

1510 — The coffee drink is introduced into Cairo.

1511 — Kair Bey, governor of Mecca, after consultation with a council of lawyers, physicians, and leading citizens, issues a condemnation of coffee, and prohibits the use of the drink. Prohibition subsequently ordered revoked by the sultan of Cairo.

* Approximate date.
† Legendary.

1517 — Sultan Selim I, after conquering Egypt, brings coffee to Constantinople.

1524 — The kadi of Mecca closes the public coffee houses because of disorders, but permits coffee drinking at home and in private. His successor allows them to re-open under license.

1530* — Coffee drinking introduced into Damascus.

1532* — Coffee drinking introduced into Aleppo.

1534 — A religious fanatic denounces coffee in Cairo and leads a mob against the coffee houses, many of which are wrecked. The city is divided into two parties, for and against coffee; but the chief judge, after consultation with the doctors, causes coffee to be served to the meeting, drinks some himself, and thus settles the controversy.

1542 — Soliman II, at the solicitation of a favorite court lady, forbids the use of coffee, but to no purpose.

1554 — The first coffee houses are opened in Constantinople by Shemsi of Damascus and Hekem of Aleppo.

1570* - 80* — Religious zealots in Constantinople, jealous of the increasing popularity of the coffee houses, claim roasted coffee to be a kind of charcoal, and the mufti decides that it is forbidden by the law. Amurath III subsequently orders the closing of all coffee houses, on religious grounds, classing coffee with wine, forbidden by the *Koran*. The order is not strictly observed, and coffee drinking continues behind closed shop-doors and in private houses.

1573 — Rauwolf, German physician and botanist, first European to mention coffee, makes a journey to the Levant.

1580 — Prospero Alpini (Alpinus), Italian physician and botanist, journeys to Egypt and brings back news of coffee.

1582 - 83 — The first printed reference to coffee appears as *chaube* in Rauwolf's *Travels*, published in German at Frankfort and Lauingen.

1585 — Gianfrancesco Morosini, city magistrate in Constantinople, reports to the Venetian senate the use by the Turks "of a black water, being the infusion of a bean called *cavee*."

1587 — The first authentic account of the origin of coffee is written by the Sheik Abd-al-Kadir,

* Approximate date.

in an Arabian manuscript preserved in the Bibliothèque Nationale, Paris.

1592 — The first printed description of the coffee plant (called *bon*) and drink (called *caova*) appears in Prospero Alpini's work *The Plants of Egypt*, written in Latin, and published in Venice.

1596* — Belli sends to the botanist de l'Ecluse "seeds used by the Egyptians to make a liquid they call *cave*."

1598 — The first printed reference to coffee in English appears as *chaoua* in a note of Paludanus in *Linschoten's Travels*, translated from the Dutch, and published in London.

1599 — Sir Antony Sherley, first Englishman to refer to coffee drinking in the Orient, sails from Venice for Aleppo.

1600* — Pewter serving-pots appear.

1600 — Iron spiders on legs, designed to sit in open fires, are used for roasting coffee.

1600* — Coffee cultivation introduced into southern India at Chickmaglur, Mysore, by a Moslem pilgrim, Baba Budan.†

1600-32 — Mortars and pestles of wood, and of metal (iron, bronze, and brass) come into common use in Europe for making coffee powder.

1601 — The first printed reference to coffee in English, employing the more modern form of the word, appears in W. Parry's book, *Sherley's Travels*, as "a certain liquor which they call coffe."

1603 — Captain John Smith, English adventurer, and founder of the colony of Virginia, in his book of travels published this year, refers to the Turks' drink, "coffa."

1610 — Sir George Sandys, the poet, visits Turkey, Egypt, and Palestine, and records that the Turks "sip a drink called *coffa* (of the berry that it is made of) in little china dishes, as hot as they can suffer it."

1614 — Dutch traders visit Aden to examine into the possibilities of coffee cultivation and coffee trading.

1615 — Pietro Della Valle writes a letter from Constantinople to his friend Mario Schipano at Venice that when he returns he will bring with him some coffee, which he believes "is a thing unknown in his native country."

1615 — Coffee is introduced into Venice.

1616 — The first coffee is brought from Mocha to Holland by Pieter Van dan Broecke.

1620 — Peregrine White's wooden mortar and pestle (used for "braying" coffee) is brought to America on the Mayflower by White's parents.

1623-27 — Francis Bacon, in his *Historia Vitae et Mortis* (1623), speaks of the Turks' "caphe"; and in his *Sylva Sylvarum* (1627) writes: "They have in Turkey a drink called *coffa* made of a berry of the same name, as black as soot, and of a strong scent. . . . . this drink comforteth the brain and heart, and helpeth digestion."

1625 — Sugar is first used to sweeten coffee in Cairo.

1632 — Burton in his *Anatomy of Melancholy* says: "The Turks have a drink called *coffa*, so named from a berry black as soot and as bitter."

1634 — Sir Henry Blount makes a voyage to the Levant, and is invited to drink "cauphe" in Turkey.

1637 — Adam Olearius, German traveler and Persian scholar, visits Persia (1633-39); and on his return tells how in this year he observed that the Persians drink *chawa* in their coffee houses.

1637 — Coffee drinking is introduced into England by Nathaniel Conopios, a Cretan student at Balliol College, Oxford.

1640 — Parkinson, in his *Theatrum Botanicum*, publishes the first botanical description of the coffee plant in English — referred to as "*Arbor Bon cum sua Buna.* The Turkes Berry Drinke."

1640 — The Dutch merchant, Wurffbain, offers for sale in Amsterdam the first commercial shipment of coffee from Mocha.

1644 — Coffee is introduced into France at Marseilles by P. de la Roque, who brought back also from Constantinople the instruments and vessels for making it.

1645 — Coffee comes into general use in Italy.

1645 — The first coffee house is opened in Venice.

1647 — Adam Olearius publishes in German his *Persian Voyage Description*, containing an account of coffee manners and customs in Persia in 1633-39.

1650* — Varnar, Dutch minister resident at the Ottoman Porte, publishes a treatise on coffee.

1650* — The individual hand-turned metal (tinplate or tinned copper) roaster appears; shaped like the Turkish coffee grinder, for use over open fires.

1650 — The first coffee house in England is opened at Oxford by Jacobs, a Jew.

1650 — Coffee is introduced into Vienna.

1652 — The first London coffee house is opened by Pasqua Rosée in St. Michael's Alley, Cornhill.

1652 — The first printed advertisement for coffee in English appears in the form of a handbill issued by Pasqua Rosée, acclaiming "The Vertue of the Coffee Drink."

1656 — Grand Vizier Kuprili, during the war with Candia, and for political reasons, suppresses the coffee houses and prohibits coffee. For the first violation the punishment is cudgeling; for a second, the offender is sewn up in a leather bag and thrown into the Bosporus.

1657 — The first newspaper advertisement for coffee appears in *The Publick Adviser* of London.

1657 — Coffee is introduced privately into Paris by Jean de Thévenot.

1658 — The Dutch begin the cultivation of coffee in Ceylon.

1660* — The first French commercial importation of coffee arrives in bales at Marseilles from Egypt.

1660 — Coffee is first mentioned in the English statute books when a duty of four pence is laid upon every gallon made and sold "to be paid by the maker."

* Approximate date.
† Legendary.

* Approximate date.

1660* — Nieuhoff, Dutch ambassador to China, is the first to make a trial of coffee with milk, in imitation of tea with milk.

1660 — Elford's "white iron" machine for roasting coffee is much used in England, being "turned on a spit by a jack."

1662 — Coffee is roasted in Europe over charcoal fires without flame, in ovens, and on stoves; being "browned in uncovered earthenware tart dishes, old pudding pans, fry pans."

1663 — All English coffee houses are required to be licensed.

1663 — Regular imports of Mocha coffee begin at Amsterdam.

1665 — The improved Turkish long brass combination coffee grinder with folding handle and cup receptacle for green beans, for boiling and serving, is first made in Damascus. About this period the Turkish coffee set, including long-handled boiler and porcelain cups in brass holders, comes into vogue.

1668 — Coffee is introduced into North America.

1669 — Coffee is introduced publicly into Paris by Soliman Aga, the Turkish ambassador.

1670 — Coffee is roasted in larger quantities in small closed sheet-iron cylinders having long iron handles designed to turn them in open fire-places. First used in Holland. Later, in France, England, and the United States.

1670 — The first attempt to grow coffee in Europe at Dijon, France, results in failure.

1670 — Coffee is introduced into Germany.

1670 — Coffee is first sold in Boston.

1671 — The first coffee house in France is opened in Marseilles in the neighborhood of the Exchange.

1671 — The first authoritative printed treatise devoted solely to coffee, written in Latin by Faustus Nairon, professor of Oriental languages, Rome, is published in that city.

1671 — The first printed treatise in French, largely devoted to coffee, *Concerning the Use of Coffee, Tea and Chocolate*, by Philippe Sylvestre Dufour, purporting to be a translation from the Latin, is published at Lyons.

1672 — Pascal, an Armenian, first sells coffee publicly at St.-Germain's fair, Paris, and opens the first Parisian coffee house.

1672 — Great silver coffee pots (with all the utensils belonging to them of the same metal) are used at St.-Germain's fair, Paris.

1674 — *The Women's Petition Against Coffee* is published in London.

1674 — Coffee is introduced into Sweden.

1675 — Charles II issues a proclamation to close all London coffee houses as places of sedition. Order revoked on petition of the traders in 1676.

1679 — An attempt by the physicians of Marseilles to discredit coffee on purely dietetic grounds fails of effect; and consumption increases at such a rate that traders in Lyons and Marseilles begin to import the green bean by the shipload from the Levant.

1679* — The first coffee house in Germany is opened by an English merchant at Hamburg.

1683 — Coffee is sold publicly in New York.

1683 — Kolschitzky opens the first coffee house in Vienna.

1684 — Dufour publishes at Lyons, France, the first work on *The Manner of Making Coffee, Tea, and Chocolate.*

1685 — *Café au lait* is first recommended for use as a medicine by Sieur Monin, a celebrated physician of Grenoble, France.

1686 — John Ray, one of the first English botanists to extol the virtues of coffee in a scientific treatise, publishes his *Universal Botany of Plants* in London.

1686 — The first coffee house is opened in Regensburg, Germany.

1689 — Café de Procope, the first real French café, is opened in Paris by François Procope, a Sicilian, coming from Florence.

1689 — The first coffee house is opened in Boston.

1691 — Portable coffee-making outfits to fit the pocket find favor in France.

1692 — The "lantern" straight-line coffee pot with true cone lid, thumb-piece, and handle fixed at right angle to the spout, is introduced into England, succeeding the curved Oriental serving pot.

1694 — The first coffee house is opened in Leipzig, Germany.

1696 — The first coffee house (The King's Arms) is opened in New York.

1696 — The first coffee seedlings are brought from Kananur, on the Malabar coast, and introduced into Java at Kedawoeng, near Batavia, but not long afterward are destroyed by flood.

1699 — The second shipment of coffee plants from Malabar to Java by Henricus Zwaardecroon becomes the progenitors of all the *arabica* coffee trees in the Dutch East Indies.

1699 — Galland's translation of the earliest Arabian manuscript on coffee appears in Paris under the title, *Concerning the First Use of Coffee and the Progress It Afterward Made.*

1700 — Ye coffee house, the first in Philadelphia, is built by Samuel Carpenter.

1700 - 1800 — Small portable coke or charcoal stoves made of sheet-iron, and fitted with horizontal revolving cylinders turned by hand, come into use for family roasting.

1701 — Coffee pots appear in England with perfect domes and bodies less tapering.

1702 — The first "London" coffee house is established in Philadelphia.

1704 — Bull's machine for roasting coffee, probably the first to use coal for commercial roasting, is patented in England.

1706 — The first samples of Java coffee, and a coffee plant grown in Java, are received at the Amsterdam botanical gardens.

1707 — The first coffee periodical, *The New and Curious Coffee House*, is issued at Leipzig by Theophilo Georgi, as a kind of organ of the first kaffee-klatsch.

1711 — Java coffee is first sold at public auction in Amsterdam.

1711 — A novelty in coffee-making is introduced into France by infusing the ground beans in a fustian (linen) bag.

1712 — The first coffee house is opened in Stuttgart, Germany.

1713 — The first coffee house is opened in Augsburg, Germany.

* Approximate date.

1714 — The thumb-piece on English coffee pots disappears, and the handle is no longer set at a right angle to the spout.

1714 — A coffee plant, raised from seed of the plant received at the Amsterdam botanical gardens in 1706, is presented to Louis XIV of France, and is nurtured in the Jardin des Plantes, Paris.

1715 — Jean La Roque publishes in Paris his *Voyage de l'Arabie Heureuse* (voyage to Arabia the Happy) containing much valuable information on coffee in Arabia and its introduction into France.

1715 — Coffee cultivation is introduced into Haiti and Santo Domingo.

1715-17 — Coffee cultivation is introduced into the Isle of Bourbon (now Réunion) by a sea captain of St. Malo, who brings the plants from Mocha by direction of the French Company of the Indies.

1718 — Coffee cultivation is introduced into Surinam by the Dutch.

1718 — Abbé Massieu's *Carmen Caffaeum*, the first and most notable poem on coffee written in Latin, is composed, and is read before the Academy of Inscriptions.

1720 — Caffè Florian is opened in Venice by Floriono Francesconi.

1721 — The first coffee house is opened in Berlin, Germany.

1721 — Meisner publishes a treatise on coffee, tea, and chocolate.

1722 — Coffee cultivation is introduced into Cayenne, from Surinam.

1723 — The first coffee plantation started in the Portuguese colony of Pará, Brazil, with plants brought from Cayenne (French Guiana) results in failure.

1723 — Gabriel de Clieu, Norman captain of infantry, sails from France, accompanied by one of the seedlings of the Java tree presented to Louis XIV, and with it shares his drinking water on a protracted voyage to Martinique.

1730 — The English bring the cultivation of coffee to Jamaica.

1732 — The British Parliament seeks to encourage the cultivation of coffee in British possessions in America by reducing the inland duty.

1732 — Bach's celebrated *Coffee Cantata* is published in Leipzig.

1737 — The Merchants' coffee house is established in New York; by some called the true cradle of American liberty and the birth-place of the Union.

1740 — Coffee culture is introduced into the Philippines from Java by Spanish missionaries.

1748 — Coffee cultivation is introduced into Cuba by Don José Antonio Gelabert.

1750 — Coffee cultivation is introduced into Celebes from Java.

1750 — The straight-line coffee pot in England begins to give way to the reactionary movement in art favoring bulbous bodies and serpentine spouts; the sides are nearly parallel, while the dome of the lid is flattened to a slight elevation above the rim.

1752 — Intensive coffee cultivation is resumed in the Portuguese colonies in Pará and Amazonas, Brazil.

1754 — A white-silver coffee roaster, eight inches high by four inches in diameter, is mentioned as being among the deliveries made to the army of Louis XV at Versailles.

1755 — Coffee cultivation is introduced into Porto Rico from Martinique.

1760 — Decoction, or boiling, of coffee in France is generally replaced by the infusion method.

1760 — João Alberto Castello Branco plants in Rio de Janeiro the first coffee tree brought to Brazil from Goa, Portuguese India.

1761 — Brazil exempts coffee from export duty.

1763 — Donmartin, a tinsmith of St. Benoît, France, invents a novel coffee pot, the inside of which is "filled by a fine flannel sack put in in its entirety." It has a tap to draw the coffee.

1764 — Count Pietro Verri publishes in Milan, Italy, a philosophic and literary periodical, entitled *Il Caffè* (the coffee house).

1765 — Mme. de Pompadour's golden coffee mill is mentioned in her inventory.

1770 — Complete revolution in style of English serving pots; return to the flowing lines of the Turkish ewer.

1770 — Chicory is first used with coffee in Holland.

1770-73 — Coffee cultivation begins in Rio, Minas, and São Paulo.

1771 — John Dring is granted a patent in England for a compound coffee.

1774 — Molke, a Belgian monk, introduces the coffee plant from Surinam into the garden of the Capuchin monastery at Rio de Janeiro.

1774 — A letter is sent by the Committee of Correspondence from the Merchants' coffee house, New York, to Boston, proposing the American Union.

1777 — King Frederick the Great of Prussia issues his celebrated coffee and beer manifesto, recommending the use of the latter in place of the former among the lower classes.

1779 — Richard Dearman is granted an English patent for a new method of making mills for grinding coffee.

1779 — Coffee cultivation is introduced into Costa Rica from Cuba by the Spanish voyager, Navarro.

1781 — King Frederick the Great of Prussia establishes state coffee-roasting plants in Germany, declares the coffee business a government monopoly, and forbids the common people to roast their own coffee. "Coffee-smellers" make life miserable for violators of the law.

1784 — Coffee cultivation is introduced into Venezuela by seed from Martinique.

1784 — A prohibition against the use of coffee, except by the rich, is issued by Maximilian Frederick, elector of Cologne.

1785 — Governor Bowdoin of Massachusetts introduces chicory to the United States.

1789 — The first import duty on coffee, two and a half cents a pound, is levied by the United States.

1789 — George Washington is officially greeted, April 23, as president-elect of the U. S. at the Merchants coffee house in New York.

1790 — Coffee cultivation is introduced into Mexico from the West Indies.

1790 — The first wholesale coffee-roasting plant in the United States begins operation at 4 Great Dock Street, New York.

1790 — The first United States advertisement for coffee appears in the *New York Daily Advertiser.*

1790 — The import duty on coffee in the United States is increased to four cents a pound.

1790 — The first crude package coffee is sold in "narrow mouthed stoneware pots and jars," by a New York merchant.

1792 — The Tontine coffee house is established in New York.

1794 — The import duty on coffee in the United States is increased to five cents a pound.

1798 — The first United States patent for an improved coffee-grinding mill is granted to Thomas Bruff, Sr.

1800* — Chicory comes into use in Holland as a substitute for coffee.

1800* — De Belloy's coffee pot, made of tin, later of porcelain, appears — the original French drip coffee pot.

1800* - 1900* — There is a return in England to the style of coffee-serving pot having the handle at right angle to the spout.

1802 — The first French patent on a coffee maker is granted to Denobe, Henrion, and Rouch for "a pharmacological-chemical coffee making device by infusion."

1802 — Charles Wyatt is granted a patent in London on an apparatus for distilling coffee.

1804* — The first cargo of coffee — and other East Indian produce — from Mocha, to be shipped in an American bottom, reaches Salem, Mass.

1806 — James Henckel is granted a patent in England on a coffee dryer, "an invention communicated to him by a certain foreigner."

1806 — The first French patent on an improved French drip coffee pot for making coffee by filtration, without boiling, is granted to Hadrot.

1806 — The coffee percolator (really an improved French drip coffee pot) is invented by Count Rumford (Benjamin Thompson), an expatriated American scientist, in Paris.

1809 — The first importation of Brazil coffee by the United States arrives at Salem, Mass.

1809 — Coffee becomes an article of commerce in Brazil.

1811 — Walter Rochfort, a London grocer and tea dealer, obtains a patent in London on a compressed coffee tablet.

1812 — Coffee in England is roasted in an iron pan or hollow cylinder made of sheet iron; and then is pounded in a mortar, or ground in a hand-mill.

1812 — Anthony Schick is granted an English patent on a method, or process, for roasting coffee, for which specifications were never enrolled.

1812 — Coffee is roasted in Italy in a glass flask with a loose cork, held over a clear fire of burning coals and continually agitated.

1812 — The import duty on coffee in the United States is increased to ten cents a pound as a war-revenue measure.

1813 — A United States patent is granted Alexander Duncan Moore, New Haven, Conn., on a mill for grinding and pounding coffee.

* Approximate date.

1814 — A war-time fever of speculation in tea and coffee causes the citizens of Philadelphia to form a non-consumption association, each member pledging himself not to pay more than twenty-five cents a pound for coffee, and not to use tea unless it is already in the country.

1816 — The import duty on coffee in the United States is reduced to five cents a pound.

1817* — The coffee biggin (said to have been invented by a man named Biggin) comes into common use in England.

1818 — The Havre coffee market for spot coffee and to arrive is established.

1819 — Morize, a Paris tinsmith, invents a double drip reversible coffee pot.

1819 — Laurens is granted a French patent on the original pumping-percolator device in which the boiling water was raised by steam pressure and sprayed over the ground coffee.

1820 — Peregrine Williamson, Baltimore, is granted the first United States patent for an improvement on a coffee roaster.

1820 — Another early form of the French percolator is patented by Gaudet, a Paris tinsmith.

1822 — Nathan Reed, Belfast, Me., is granted a United States patent on a coffee huller.

1824 — Richard Evans is granted a patent in England for a commercial method of roasting coffee, comprising a cylinder sheet-iron roaster fitted with improved flanges for mixing, a hollow tube and trier for sampling the coffee while roasting, and a means for turning the roaster completely over to empty it.

1825 — The pumping percolator, working by steam pressure and by partial vacuum, comes into vogue in France, Germany, Austria, and elsewhere.

1825 — The first coffee-pot patent in the United States is issued to Lewis Martelley, New York.

1825 — Coffee cultivation is introduced into Hawaii from Rio de Janeiro.

1827 — The first patent for a really practicable French coffee percolator is granted to Jacques Augustin Gandais, a manufacturer of plated jewelry in Paris.

1828 — Charles Parker, Meriden, Conn., begins work on the original Charles Parker coffee mill.

1829 — The first French patent on a coffee mill is granted Colaux et Cie, Molsheim, France.

1829 — Établissements Lauzanne begin the manufacture of hand-turned cylinder coffee roasting machines in Paris.

1830 — The import duty on coffee in the United States is reduced to two cents a pound.

1831 — David Selden is granted a patent in England for a coffee-grinding mill having cones of cast iron.

1831 — John Whitmee & Co., England, begin the manufacture of coffee-plantation machinery.

1831 — The import duty on coffee in the United States is reduced to one cent a pound.

1832 — A United States patent is granted to Edmund Parker and Herman M. White, Meriden, Conn., on a new household coffee and spice mill. (Chas. Parker Co. business founded same year.)

1832 — Government coffee cultivation by forced labor is introduced into Java.

* Approximate date.

1832 — Coffee is placed on the free list in the United States.

1832 - 33 — United States patents are granted to Ammi Clark, Berlin, Conn., on improved coffee and spice mills for household use.

1833 — Amos Ransom, Hartford, Conn., is granted a United States patent on a coffee roaster.

1833 - 34 — A complete English coffee-roasting-and-grinding plant is installed in New York by James Wild.

1834 — John Chester Lyman is granted a patent in England on a coffee huller employing circular wooden disks with wire teeth.

1835 — Thomas Ditson, Boston, is granted a United States patent on a coffee huller. Ten others follow.

1835 — The first private coffee estates are started in Java and Sumatra.

1836 — The first French coffee-roaster patent is issued to François René Lacoux, Paris, on a combination coffee roaster and grinder made of porcelain.

1837 — The first French coffee substitute is patented by François Burlet, Lyons.

1839 — James Vardy and Moritz Platow are granted an English patent on a form of urn percolator employing the vacuum process of coffee making, the upper vessel being made of glass.

1840 — Central America begins shipping coffee to the United States.

1840* — Robert Napier, of the Clyde engineering firm of Robert Napier & Sons, invents the Napierian vacuum coffee machine to make coffee by distillation and filtration, but the idea is never patented. (See 1870.)

1840 — Abel Stillman, Poland, N. Y., is granted a United States patent on a family coffee roaster having a mica window to enable the operator to observe the coffee while roasting.

1840 — The English begin to cultivate coffee in India.

1840 — Wm. McKinnon & Co., Aberdeen, Scotland, begin the manufacture of plantation machinery. (Established 1798.)

1842 — The first French patent on a glass coffee-making device is granted to Mme. Vassieux of Lyons.

1843 — Ed. Loysel de Santais, Paris, is granted a patent on an improved coffee-making device, the principle of which is later incorporated in a hydrostatic percolator making 2,000 cups an hour.

1846 — James W. Carter, Boston, is granted a United States patent on the Carter "pull-out" coffee roaster.

1847 — J. R. Remington, Baltimore, is granted a United States patent on a coffee roaster employing a wheel of buckets to move the green coffee beans singly through a charcoal-heated trough in which they are roasted while passing over the rotating wheel.

1847 - 48 — William Dakin and Elizabeth Dakin are granted patents in England for a roasting cylinder lined with gold, silver, platinum, or alloy, and traversing carriage on a railway to move the roaster in and out of the heating chamber.

1848 — Thomas John Knowlys is granted a patent in England on a perforated roasting cylinder coated with enamel.

1848 — Luke Herbert is granted the first English patent on a coffee-grinding machine.

1849 — Apoleoni Preterre, Havre, is granted a patent in England on a coffee roaster mounted on a weighing apparatus to indicate loss of weight in roasting, and automatically to stop the roasting process.

1849 — Thomas R. Wood of Cincinnati is granted a United States patent on Wood's improved spherical coffee roaster for use on kitchen stoves.

1850 — John Gordon & Co. begin the manufacture of coffee-plantation machinery in London.

1850* — The cultivation of coffee is introduced into Guatemala.

1850* — John Walker introduces his cylinder pulper for coffee plantations.

1852 — Edward Gee secures a patent in England for an improved combination of apparatus for roasting coffee; having a perforated cylinder fitted with inclined flanges for turning the beans while roasting.

1852 — Robert Bowman Tennent is granted a patent in England on a two-cylinder machine for pulping coffee. Others follow.

1852 — Coffee cultivation is introduced into Salvador from Cuba.

1852 — Tavernier is granted a French patent on a coffee tablet.

1853 — Lacassagne and Latchoud are granted a French patent on liquid and solid extracts of coffee.

1855 — C. W. Van Vliet, Fishkill Landing, N. Y., is granted a patent on a household coffee mill employing upper breaking, and lower grinding, cones. Assigned to Charles Parker, Meriden, Conn.

1856 — Waite and Sener's Old Dominion pot is patented in the United States.

1857 — The Newell patents on coffee-cleaning machinery are issued in America. Sixteen patents follow.

1857 — George L. Squier, Buffalo, N. Y., begins the manufacture of coffee-plantation machinery.

1859 — John Gordon, London, is granted an English patent on a coffee pulper.

1860* — Osborn's Celebrated Prepared Java coffee, the pioneer ground-coffee package, is put on the New York market by Lewis A. Osborn.

1860 — Marcus Mason, an American mechanical engineer in San José, Costa Rica, invents the Mason pulper and cleaner.

1860 — John Walker is granted a patent in England on a disk pulper for pulping Arabian coffee.

1860 — Alexius Van Gulpen begins the manufacture of a green-coffee-grading machine at Emmerich, Germany.

1861 — An import duty of four cents a pound on coffee is imposed by the United States as a war-revenue measure.

1862 — The import duty on coffee in the United States is increased to five cents a pound.

1862 — The first paper-bag factory in the United States, making bags for loose coffee, begins operation in Brooklyn.

* Approximate date.

* Approximate date.

1862 — E. J. Hyde, Philadelphia, is granted a United States patent on a combined coffee roaster and stove, fitted with a crane on which the roasting cylinder is revolved and swung out horizontally from the stove.

1864 — Jabez Burns, New York, is granted a United States patent on the Burns coffee roaster, the first machine that did not have to be moved away from the fire for discharging the roasted coffee — marking a distinct advance in the manufacture of coffee-roasting apparatus.

1864 — James Henry Thompson, Hoboken, and John Lidgerwood, Morristown, N. J., are granted an English patent on a coffee-hulling machine.

1865 — John Arbuckle introduces to the trade at Pittsburgh roasted coffee in individual packages, the forerunner of the Ariosa package.

1866 — William Van Vleek Lidgerwood, American chargé d'affaires, Rio de Janeiro, is granted an English patent on a coffee-hulling-and-cleaning machine.

1867 — Jabez Burns is granted United States patents on a coffee cooler, a coffee mixer, and a grinding mill, or granulator.

1868 — Thomas Page, New York, begins the manufacture of a pull-out coffee roaster similar to the Carter machine.

1868 — Alexius Van Gulpen, in partnership with J. H. Lensing and Theodore von Gimborn, begins the manufacture of coffee-roasting machines at Emmerich, Germany.

1868 — E. B. Manning, Middletown, Conn., patents his tea-and-coffee pot in the United States.

1868 — John Arbuckle is granted a United States patent for a roasted-coffee coating consisting of Irish moss, isinglass, gelatin, sugar, and eggs.

1869 — Élie Moneuse and L. Duparquet, New York, are granted three United States patents on a coffee pot, or urn, formed of sheet copper and lined with pure sheet block tin.

1869 — B. G. Arnold, New York, engineers the first large green-coffee speculation; his success as an operator winning for him the title of King of the Coffee Trade.

1869 — Henry E. Smyser, assignor to the Weikel & Smith Spice Co., Philadelphia, is granted his first United States patent on a spice box used also for coffee.

1869 — Licenses to sell coffee in London are abolished.

1869 — The coffee-leaf disease is first noticed in Ceylon.

1870 — John Gulick Baker, Philadelphia, one of the founders of the Enterprise Manufacturing Co. of Pennsylvania, is granted a patent on a coffee grinder introduced to the trade by the Enterprise Manufacturing Co. as its Champion No. 1 mill.

1870 — Delephine, Sr., Marourme, is granted a French patent on a tubular coffee roaster that turns over the flame.

1870 — Alexius Van Gulpen, Emmerich, Germany, brings out a globular coffee roaster having perforations and an exhauster.

1870 — Thos. Smith & Son, Glasgow, Scotland, (Elkington & Co., successors), begin the manufacture of the Napierian vacuum coffee-making machines for brewing coffee by distillation.

1870 — First United States trade-mark for essence of coffee is registered by Butler, Earhart & Co., Columbus, Ohio.

1870 — The first coffee-valorization enterprise in Brazil results in failure.

1871 — J. W. Gillies, New York, is granted two patents in the United States for roasting and treating coffee by subjecting it to an intervening cooling operation.

1871 — First United States trade-mark for coffee is issued to Butler, Earhart & Co., Columbus, Ohio, for Buckeye, first used 1870.

1871 — G. W. Hungerford is granted United States patents on coffee-cleaning-and-polishing machines.

1871 — The import duty on coffee in the United States is reduced to three cents a pound.

1872 — Jabez Burns, New York, is granted a United States patent on an improved coffee-granulating mill. Another in 1874.

1872 — J. Guardiola, Chocola, Guatemala, is granted his first United States patents on a coffee pulper and a coffee drier.

1872 — The import duty on coffee in the United States is repealed.

1872 — Robert Hewitt, Jr., New York, publishes the first American work on coffee, *Coffee: Its History, Cultivation, and Uses.*

1873 — J. G. Baker, Philadelphia, assignor of the Enterprise Manufacturing Co. of Pennsylvania, is granted a United States patent on a grinding mill later known to the trade as Enterprise Champion Globe No. 0.

1873 — Marcus Mason begins the manufacture of coffee-plantation machinery in the United States.

1873 — Ariosa, first successful national brand of package coffee is put on the United States market by John Arbuckle of Pittsburgh. (Registered 1900.)

1873 — H. C. Lockwood, Baltimore, is granted a United States patent on a coffee package made of paper and lined with tin-foil, with false bottom and top.

1873 — The first international syndicate to control coffee is organized in Frankfort, Germany, by the German Trading Company, and operates sucessfully for eight years.

1873 — The Jay Cooke stock-market panic causes the price of Rios in the New York market to drop from twenty-four cents to fifteen cents in one day.

1873 — E. Dugdale, Griffin, Ga., is granted two United States patents on coffee substitutes.

1873 — The first "coffee palace," the Edinburgh Castle, designed to replace public-houses for workingmen, is opened in London.

1874 — John Arbuckle is granted a United States patent on a coffee-cleaner-and-grader.

1875 — Coffee cultivation is introduced into Guatemala.

1875-76-78 — Turner Strowbridge, of New Brighton, Pa., is granted three United States patents on a box coffee mill first made by Logan & Strowbridge.

1876 — John Manning brings out his valve-type percolator in the United States.

1876-78 — Henry B. Stevens, Buffalo, assignor to George L. Squier, Buffalo, is granted important United States patents on coffee-cleaning-and-grading machines.

1877 — The first German patent on a commercial coffee roaster is issued in Berlin to G. Tuberman's Son.

1877 — A French patent is granted Marchand and Hignette, Paris, on a sphere or ball coffee roaster.

1877 — The first French patent on a gas coffee roaster is issued to Roure of Marseilles.

1878 — Coffee cultivation is introduced into British Central Africa.

1878 — *The Spice Mill*, the first paper in America devoted to the coffee and spice trades, is founded by Jabez Burns of New York.

1878 — A United States patent is issued to Rudolphus L. Webb, assignor to Landers, Frary & Clark of New Britain, Conn., on an improved box coffee grinder for home use.

1878 — Chase & Sanborn, the Boston coffee roasters, are the first to pack and ship roasted coffee in sealed containers.

1878 — John C. Dell, Philadelphia, is granted a United States patent on a coffee mill for store use.

1879 — H. Faulder, Stockport, Lancaster, Eng., is granted an English patent on the first English gas coffee roaster, now made by the Grocers Engineering & Whitmee, Ltd.

1879 — A new gas coffee roaster is invented in England by Fleury & Barker.

1879 — C. F. Hargreaves, Rio de Janeiro, is granted an English patent on machinery for hulling, polishing, and separating coffee.

1879 — Charles Halstead, New York, is the first to bring out a metal coffee pot with a china interior.

1879-80 — Orson W. Stowe, of the Peck, Stowe & Wilcox Co., Southington, Conn., is granted United States patents on an improved coffee and spice mill.

1880 — Great failures in the American coffee trade as a result of syndicate planting and buying of coffees in Brazil, Mexico, and Central America.

1880 — Coffee pots with tops, having muslin bottoms for clarifying and straining, are first made by Duparquet, Huot & Moneuse Co. in the United States.

1880 — Peter Pearson, Manchester, Eng., is granted a patent in England on a coffee roaster wherein gas is substituted for coke as fuel.

1880 — Henry E. Smyser, Philadelphia, is granted a United States patent on a package-making-and-filling machine, forerunner of the weighing-and-packing machine, the control of which by John Arbuckle led to the coffee-sugar war with the Havemeyers.

1880 — Fancy paper bags for coffee are first used in Germany.

1880-81 — G. W. and G. S. Hungerford are granted United States patents on machines for cleaning, scouring, and polishing coffee.

1880-81 — The first big coffee-trade combination in North America, known as the "trinity" (O. G. Kimball, B. G. Arnold and Bowie Dash, all of New York), has a sensational collapse, its failure being the result of syndicate planting and buying of coffees in Brazil, Mexico, and Central America.

1881 — Steele & Price, Chicago, are the first to introduce all-paper cans (made of strawboard) for coffee.

1881 — C. S. Phillips, Brooklyn, is granted three patents in the United States for aging and maturing coffee.

1881 — The Emmericher Machinenfabrik und Eisengiesserei at Emmerich, Germany, begins the manufacture of a closed globular roaster with a gas-heater attachment.

1881 — Jabez Burns is granted a United States patent on an improved construction of his roaster, comprising a turn-over front head, serving for both feeding and discharging.

1881 — The Morgan brothers, Edgar H. and Charles, begin the manufacture of household coffee mills, subsequently acquired (1885) by the Arcade Manufacturing Co., Freeport, Ill.

1881 — Francis B. Thurber, New York, publishes the second important American work on coffee, *Coffee from Plantation to Cup*.

1881 — Harvey Ricker, Brooklyn, introduces to the trade a "minute" coffee pot and urn, known as the Boss, name subsequently changed to Minute, and later improved and patented (1901) as the Half Minute coffee pot — a filtration device employing a cotton sack with a thick bottom.

1881 — New York Coffee Exchange is incorporated.

1882 — Chris. Abele, New York, is granted a patent in the United States on an improvement on a coffee roaster, similar to the original Burns machine (on which the 1864 patent had expired) known as the Knickerbocker.

1882 — The Hungerfords, father and son, bring out a coffee roaster, similar to the first Burns machine, in competition with Chris. Abele.

1882 — A German patent is granted to Emil Newstadt, Berlin, on one of the earliest coffee-extract-making machines.

1882 — The first French coffee exchange, or terminal market, is opened at Havre.

1882 — New York Coffee Exchange begins business.

1883 — The Burns Improved Sample Coffee Roaster is patented in the United States by Jabez Burns.

1884 — The Star coffee pot, later known as the Marion Harland, is introduced to the trade.

1884 — The Chicago Liquid Sack Co. introduces the first combination paper and tin-end can for coffee in the United States.

1885 — F. A. Cauchois introduces into the United States market an improved porcelain-lined coffee urn.

1885 — Property of New York Coffee Exchange is transferred to the Coffee Exchange, City of New York, incorporated by special charter.

1886 — Walker, Sons & Co., Ltd., begin experiments in Ceylon with a Liberian disk coffee pulper; fully perfected in 1898.

1886-88 — The "great coffee boom" forces the price of Rio 7's from seven and a half to twenty-two and a quarter cents, the subsequent panic reducing the price to nine cents. Total sales on the New York Coffee Exchange,

1887-88, amount to 47,868,750 bags; and prices advance 1,485 points during 1886-87.

1887 — Beeston Tupholme, London, is granted a patent in England on a direct-flame gas coffee roaster.

1887 — Coffee cultivation is introduced into Tonkin, Indo-China.

1887 — Coffee exchanges are opened in Amsterdam and Hamburg.

1888 — Evaristo Conrado Engelberg, Piracicaba, São Paulo, Brazil, is granted a United States patent on a coffee-hulling machine (invented in 1885); and the same year, the Engelberg Huller Co., Syracuse, N. Y., is organized for the purpose of manufacturing and selling Engelberg machines.

1888 — Karel F. Henneman, the Hague, Netherlands, is granted a patent in Spain on a direct-flame gas coffee roaster.

1888 — A French patent is granted to Postulart on a gas roaster.

1889 — David Fraser, who came to the United States in 1886 from Glasgow, Scotland, establishes the Hungerford Co., succeeding to the business of the Hungerfords.

1889 — The Arcade Manufacturing Co., Freeport, Ill., brings out the first "pound" coffee mill.

1889 — Karel F. Henneman, the Hague, Netherlands, is granted patents in Belgium, France, and England, on his direct-flame gas coffee roaster.

1889 — C. A. Otto is granted a German patent on a spiral-coil gas coffee machine to roast coffee in three and a half minutes.

1890 — A. Mottant, Bar-le-Duc, France, begins the manufacture of coffee-roasting machines.

1890* — Coffee exchanges are opened in Antwerp, London, and Rotterdam.

1890 — Sigmund Kraut begins the manufacture of fancy grease-proof paper-lined coffee bags in Berlin.

1891 — The New England Automatic Weighing Machine Co., Boston, begins the manufacture of machines to weigh coffee into cartons and other packages.

1891 — R. F. E. O'Krassa, Antigua, Guatemala, is granted an important English patent on a machine for pulping coffee.

1891 — John List, Black Heath, Kent, Eng., is granted an English patent on a steam coffee urn described as an improvement on the Napierian system.

1892 — T. von Gimborn, Emmerich, Germany, is granted an English patent on a coffee roaster employing a naked gas flame in a rotary cylinder.

1892 — The Fried. Krupp A. G. Grusonwerk, Magdeburg-Buckau, Germany, begins the manufacture of coffee-plantation machinery.

1893 — Cirilo Mingo, New Orleans, is granted a United States patent on a process for maturing, or aging, green coffee beans by moistening the bags.

1893 — The first direct-flame gas coffee roaster in America (Tupholme's English machine) is installed by F. T. Holmes at the plant of the Potter-Parlin Co., New York, which places similar machines on daily rental basis throughout the United States, limiting leases to one firm in a city, obtaining exclusive American rights from the Waygood, Tupholme Co., now the Grocers Engineering & Whitmee, Ltd., London.

1893 — Karel F. Hennemann, the Hague, Netherlands, is granted a United States patent on his direct-flame gas coffee roaster.

1894 — The first automatic weighing machine to weigh goods in cartons is installed in the plant of Chase & Sanborn, Boston.

1894 — Joseph M. Walsh, Philadelphia, publishes his *Coffee; Its History, Classification and Description.*

1895 — Gerritt C. Otten and Karel F. Henneman, the Hague, Netherlands, are granted a United States patent on a coffee roaster.

1895 — Adolph Kraut introduces German-made double (grease-proof lined) paper bags for coffee in America.

1895 — Marcus Mason, assignor to Marcus Mason & Co., New York, is granted United States patents on machines for pulping and polishing coffee.

1895 — Thomas M. Royal, Philadelphia, is the first to manufacture in the United States a fancy duplex-lined paper bag.

1895 — Édelestan Jardin publishes in Paris a work on coffee, entitled *Le Caféier et le Café.*

1895 — The Electric Scale Co., Quincy, Mass., begins the manufacture of pneumatic weighing machines; business continued by the Pneumatic Scale Corp., Ltd., Norfolk Downs, Mass.

1896 — Natural gas is first used in the United States as fuel for roasting, being introduced under coal roasting cylinders in Pennsylvania and Indiana by improvised gas-burners.

1896-1897 — Beeston Tupholme is granted United States patents on his direct-flame gas coffee roaster.

1897 — Joseph Lambert of Vermont begins the manufacture and sale in Battle Creek, Mich., of the Lambert self-contained coffee roaster without the brick setting then required for coffee roasting machines.

1897 — A special gas burner (made the basis of application for patent) is first attached to a regular Burns roaster.

1897 — The Enterprise Manufacturing Co., Pennsylvania, is the first regularly to employ electric motors for driving commercial coffee mills by means of belt-and-pulley attachments.

1897 — Carl H. Duehring, Hoboken, N. J., assignor to D. B. Fraser, New York, is granted a United States patent on a coffee roaster.

1898 — The Hobart Manufacturing Co., Troy, Ohio, puts on the market one of the first coffee grinders connected with an electric motor and driven by a belt-and-pulley attachment.

1898 — Millard F. Hamsley, Brooklyn, is granted a United States patent on an improved direct-flame gas coffee roaster.

1898 — Edwin Norton of New York is granted a United States patent on a vacuum process of canning foods, later applied to coffee. Others follow.

1898 — J. A. Olavarria, a distinguished Venezuelan, first advocates a plan for restriction of coffee production, and for regulation of coffee exports from countries suffering from over-production.

* Approximate date.

1898 — A bear campaign forces Rio 7's down to four and a half cents on the New York Coffee Exchange.

1899 — The bubonic-plague boom temporarily halts the downward trend of coffee prices.

1899 — The Canister Co., Phillipsburg, N. J., begins the manufacture of square and oblong fiber-bodied tin-end cans for coffee.

1899 — Soluble coffee is invented in Chicago by Dr. Sartori Kato, a chemist of Tokio.

1899 — David B. Fraser, New York, is granted two patents in the United States, one for a coffee roaster and one for a coffee cooler.

1899 — Ellis M. Potter, New York, is granted a United States patent on a direct-flame gas coffee roasting machine embodying certain improvements on the Tupholme machine, whereby the gas flame is spread over a large area, so avoiding scorching and securing a more thorough and uniform roast.

1900 — The Burns direct-flame gas coffee roaster with a patented swing-gate head for feeding and discharging at the center, is first introduced to the trade.

1900 — First gear-driven electric coffee grinder is introduced into the United States market by the Enterprise Manufacturing Co. of Pennsylvania.

1900 — The Burns swing-gate sample-coffee roasting outfit is patented in the United States.

1900 — Hills Bros., San Francisco, are the first to pack coffee in a vacuum under the Norton patents.

1900 — Charles Morgan, Freeport, Ill., is granted a United States patent on a glass-jar coffee mill, with removable glass measuring cup.

1900 — R. F. E. O'Krassa, Antigua, Guatemala, is granted an English and a United States patents on machines for shelling and drying coffee.

1900 — Chemically purified and neutralized rosin as a glaze (*harz-glasur*) for roasted coffee, designed to keep it fresh and palatable, is first discovered and applied in Germany.

1900 — Charles Lewis is granted a United States patent on his Kin Hee filter coffee pot.

1900-1901 — A new era in coffee is inaugurated when Santos permanently displaces Rio as the world's largest source of supply.

1901 — Kato's soluble coffee is put on the United States market by the Kato Coffee Company at the Pan-American Exposition in Buffalo.

1901 — American Can Co. begins the manufacture and sale of tin coffee cans in the United States.

1901 — Improved all-paper cans for coffee (made of strawboard or chip-board, plain or manila-lined) are introduced into the United States market by J. H. Kuechenmeister of St. Louis.

1901 — The first issue of *The Tea and Coffee Trade Journal*, devoted to the interests of the tea and coffee trades, appears in New York.

1901 — Coffee cultivation is introduced into British East Africa from Réunion Island.

1901 — Robert Burns of New York is granted two United States patents on a coffee roaster and cooler.

1901 — Joseph Lambert of Marshall, Mich., introduces to the trade in the United States a gas coffee roaster, one of the earliest machines employing gas as fuel for indirect roasting.

1901 — T. C. Morewood, Brentford, Middlesex, Eng., is granted an English patent on a gas coffee roaster with a removable sampling tube.

1901 — F. T. Holmes joins the Huntley Manufacturing Co., Silver Creek, N. Y., which then begins to build the Monitor coffee roaster for the trade.

1901 — Landers, Frary & Clark's Universal percolator is patented in the United States.

1902 — The Coles Manufacturing Co. (Braun Co., successors) and Henry Troemner, Philadelphia, begin the manufacture and sale of gear-driven electric coffee grinders.

1902 — The Pan-American Congress, meeting in Mexico City, proposes an international congress for the study of coffee, to meet in New York, October, 1902.

1902 — An international coffee congress is held in New York, October 1 to October 30.

1902 — *Robusta* coffee is introduced into Java from the Jardin Botanique at Brussels.

1902 — The first fancy duplex paper bag made by machinery from a roll of paper is produced by the Union Bag & Paper Corp.

1902 — The Jagenberg Machine Co. begins the introduction into the United States of a line of German-made automatic packaging-and-labeling machines for coffee.

1902 — T. K. Baker, Minneapolis, is granted two United States patents on a cloth-filter coffee maker.

1903 — A United States patent on a coffee concentrate and process of making the same (soluble coffee) is granted to Sartori Kato of Chicago, assignor to the Kato Coffee Company of Chicago.

1903 — F. A. Cauchois introduces Coffey's soluble coffee to the United States coffee trade, the product being ground roasted coffee mixed with sugar and reduced to a powder.

1903 — Overproduction in Brazil causes Santos 4's to drop to 3.55 cents on the New York Exchange, the lowest price ever recorded for coffee.

1903 — John Arbuckle, New York, is granted a United States patent on a coffee-roasting apparatus, employing a fan to force the "hot fire gases" into the roasting cylinder.

1903 — George C. Lester, New York, is granted a United States patent on an electric coffee roaster.

1904 — Dr. E. Denekamp is granted a United States patent on a rosin glaze for roasted coffee, designed to preserve its flavor and aroma.

1904 — The so-called "cotton crowd," under the leadership of D. J. Sully, forces green-coffee prices up to 11.85 cents, all records for business on the New York Coffee Exchange being smashed by the sale of over a million bags on February 5.

1904 — Sigmund Sternau, J. P. Steppe, and L. Strassberger, assignors to S. Sternau & Co., New York, are granted a United States patent on a coffee percolator.

1904-05 — Douglas Gordon, assignor to Marcus Mason & Co., New York, is granted United States patents on a coffee pulper and a coffee-drier.

1905 — The A. J. Deer Co., Buffalo (now at Hornell, N. Y.), begins the sale of its Royal electric coffee mills direct to dealers, on the instalment plan, revolutionizing the former practise of selling coffee mills through the hardware jobbers.

1905 — The Henneman direct-flame gas coffee roaster, a Dutch machine, is introduced into the United States market by C. A. Cross, Fitchburg, Mass.

1905 — H. L. Johnston is granted a United States patent on a coffee mill which he assigns to the Hobart Manufacturing Co., Troy, Ohio.

1905 — Frederick A. Cauchois introduces his Private Estate coffee maker, a filtration device employing Japanese filter paper.

1905 — Finley Acker, Philadelphia, is granted a United States patent on a coffee percolator, employing "porous or bibulous paper" as a filtering medium and having side perforations.

1905 — A coffee exchange is opened in Trieste, Austria-Hungary.

1905 — The Kaffee-Handels Aktiengesellschaft, Bremen, is granted a German patent on a process for freeing coffee from caffein.

1906 — H. D. Kelly, Kansas City, Mo., is granted a United States patent on the Kellum Thermo Automatic coffee urn, employing a coffee extractor in which the ground coffee is continually agitated before percolation by a vacuum process. Sixteen patents follow.

1906 — G. Washington, an American chemist (born in Belgium of English parents), living temporarily in Guatemala City, invents a refined (soluble) coffee.

1906 — Frank T. Holmes, Brooklyn (assignor to the Huntley Manufacturing Co.), is granted a patent for an improvement on a coffee-roasting machine.

1906 — Captain Moegling's electric-fuel coffee roaster, invented in 1900, is given a practical demonstration in Germany.

1906 — Ludwig Schmidt, assignor to the Essmueller Mill Furnishing Co., St. Louis, is granted a United States patent on a coffee roaster.

1906-07 — Brazil produces a record-breaking crop of 20,190,000 bags, and the State of São Paulo inaugurates a plan to valorize coffee.

1907 — The Pure Food and Drugs Act comes into force in the United States, making it obligatory to label all coffees correctly.

1907 — Desiderio Pavoni, Milan, is granted a patent in Italy for an improvement on the Bezzara system of preparing and serving coffee as a rapid infusion of a single cup.

1907 — P. E. Edtbauer (Mrs. E. Edtbauer), Chicago, is granted a United States patent on a duplex automatic weighing machine, the first simple, fast, accurate, and moderate-priced machine for weighing coffee.

1908 — Dr. John Friederick Meyer, Jr., Ludwig Roselius, and Karl Heinrich Wimmer, are granted a United States patent on a process for freeing coffee of caffein.

1908 — Brazil begins a propaganda for coffee in England by subsidizing an English company organized for that purpose.

1908 — Porto Rico coffee planters present a memorial to the Congress of the United States asking for a protective tariff of six cents a pound on all foreign coffee.

1908 — The revivification of the valorization coffee enterprise is accomplished by a combination of bankers and the Brazil Government, with a loan of $75,000,000 placed through Hermann Sielcken with banking houses in England, Germany, France, Belgium, and the United States.

1908 — J. C. Prims, of Battle Creek, Mich., patents a corrugated-cylinder improvement for a gas-and-coal coffee roaster of small capacity (50 to 130 pounds) designed for retail stores.

1908 — An improved type of Burns roaster, comprising an open perforated cylinder with flexible back head and balanced front bearing, is granted a patent in the United States.

1908 — I. D. Richheimer, Chicago, introduces his Tricolator, an improved device employing Japanese filter paper.

1908-11 — R. F. E. O'Krassa, Antigua, Guatemala, is granted several English patents on machines for hulling, washing, drying, and separating coffee.

1909 — The G. Washington refined (prepared) soluble coffee is put on the United States market.

1909 — The A. J. Deer Co. acquires the Prims coffee roaster and re-introduces it to the trade as the Royal coffee roaster.

1909 — The Burns tilting sample-coffee roaster is patented in the United States for gas or electric heating units.

1909 — Frederick A. Cauchois of New York is granted a United States patent on a coffee urn fitted with a centrifugal pump for repouring.

1909 — C. F. Blanke, St. Louis, is granted two United States patents on a china coffee pot with a dripper bag.

1910 — The German caffein-free coffee is first introduced to the trade of the United States by Merck & Co., New York, under the brand name Dekafa, later changed to Dekofa.

1910 — B. Belli publishes in Milan, Italy, a work on coffee entitled *Il Caffè*.

1910 — Frank Bartz, assignor to the A. J. Deer Co., Hornell, N. Y., is granted two United States patents on flat and concave coffee-grinding disks provided with concentric rows of inclined teeth, used in electric coffee mills.

1911 — All-fiber parchment-lined Damptite cans for coffee are introduced by the American Can Company.

1911 — The coffee roasters of the United States organize into a national association.

1911 — Robert H. Talbutt, Baltimore (assignor to J. E. Baines, trustee, Washington) is granted a United States patent on an electric coffee roaster.

1911 — Edward Aborn, New York, introduces his Make-Right coffee filter, and is granted a United States patent on it.

1912 — Robert O'Krassa, Antigua, Guatemala, is granted four United States patents on machines for washing, drying, separating, hulling, and polishing coffee.

1912 — The C. F. Blanke Tea & Coffee Co., St. Louis, brings out Magic Cup, later known as Faust Soluble, coffee.

1912 — The United States government brings suit to force the sale of coffee stocks held in the United States under the valorization agreement.

1912 — John E. King, Detroit, is granted a United States patent on an improved coffee percolator employing a filter-paper attachment.

1913 — F. F. Wear, Los Angeles, Cal., perfects a coffee-making device in which a metal perforated clamp is employed to apply a filter paper to the under side of an English earthenware adaptation of the French drip pot.

1913 — F. Lehnhoff Wyld, Guatemala City, and E. T. Cabarrus organize the "Société du Café Soluble Belna," Brussels, Belgium, to put on the European market a refined soluble coffee under the brand name Belna.

1913 — Herbert L. Johnston, assignor to the Hobart Electric Manufacturing Co., Troy, Ohio, is granted a United States patent on a machine for refining coffee.

1914 — The Association Nationale du Commerce des Cafés is established at 5 Place Jules Ferry, Havre, to protect the interests of the coffee trade of all France.

1914 — The Kaffee Hag Corporation, capital $1,000,000, is organized in New York to continue marketing in the United States the German caffein-free coffee under its original German brand name.

1914 — Robert Burns of New York, assignor to Jabez Burns & Sons, is granted a United States patent on a coffee-granulating mill.

1914 — The Phylax coffee maker, employing an improved French-drip principle, is introduced to the trade by the Phylax Coffee Maker Co., Detroit (succeeded in 1922 by the Phylax Company of Pennsylvania).

1914 — The first national coffee week is promoted in the United States by the National Coffee Roasters Association.

1914-15 — Herbert Galt, Chicago, is granted three United States patents on the Galt coffee pot, all aluminum, having two parts, a removable cylinder employing the French-drip principle, and the containing pot.

1915 — The Burns Jubilee (inner-heated) gas coffee roaster is patented in the United States and put on the market.

1915 — The National Coffee Roasters Association Home coffee mill, employing a set screw operating on a cog-and-ratchet principle, is introduced to the trade.

1915 — The second national coffee week is held in the United States under the auspices of the National Coffee Roasters Association.

1916 — The Federal Tin Co. begins the manufacture of tin coffee containers for use in connection with automatic packing machines.

1916 — The National Paper Can Co., Milwaukee, introduces to the United States trade a new hermetically sealed all-paper can for coffee.

1916 — A United States patent is granted to I. D. Richheimer, Chicago, for an improvement on his Tricolator.

1916 — The Coffee Trade Association, London, is formed to include brokers, merchants, and wholesale dealers.

1916 — The Coffee Exchange, City of New York, changes its name to the New York Coffee and Sugar Exchange, admitting sugar trading.

1916 — Saul Blickman, assignor to S. Blickman, New York, is granted a United States patent on an apparatus for making and dispensing coffee.

1916 — Orville W. Chamberlain, New Orleans, is granted a United States patent on an automatic drip coffee pot.

1916 — Jules Le Page, Darlington, Ind., is granted two United States patents on cutting-rolls to cut, and not to grind or crush, coffee, later marketed by the B. F. Gump Co., Chicago, as the Ideal steel-cut coffee mill.

1916-17 — The first hermetically-sealed all-paper cans for coffee are introduced to the United States trade, patented in 1919 by the National Paper Can Co., Milwaukee.

1917 — The Baker Importing Co., Minneapolis and New York, puts on the United States market Barrington Hall soluble coffee.

1917 — Richard A. Greene and William G. Burns, New York, assignors to Jabez Burns & Sons, are granted patents in the United States on the Burns flexible-arm cooler (for roasted batches), providing full fan-suction connection to a cooler box at all points in its track travel.

1918 — John E. King, Detroit, Mich., is granted a United States patent on an irregular-grind of coffee, consisting of coarsely grinding ten percent of the product and finely grinding ninety percent.

1918 — The Charles G. Hires Co., Philadelphia, brings out Hires soluble coffee.

1918 — I. D. Richheimer, promoter of the original soluble coffee of Kato, and the Kato patent, organizes the Soluble Coffee Company of America to supply soluble coffee to the American army overseas; after the armistice, licensing other merchants under the Kato patents, or offering to process the merchants' own coffee for them, if desired.

1918 — The United States government places coffee importers, brokers, jobbers, roasters, and wholesalers under a war-time licensing system to control imports and prices.

1918-19 — The United States government coffee control results in the accumulation at Brazil ports of more than 9,000,000 bags; in spite of which, Brazil speculators force Brazil grades up 75 to 100 percent., costing United States traders millions of dollars.

1919 — The Kaffee Hag Corporation becomes Americanized by the sale of 5,000 shares of its stock sold by the alien property custodian and by the purchase of the remaining 5,000 shares by George Gund, Cleveland, Ohio.

1919 — William A. Hamor and Charles W. Trigg, Pittsburgh, Pa., assignors to John E. King, Detroit, Mich., are granted a United States patent on a process for making a new soluble coffee. The process consists in bringing the volatilized caffeol in contact with a petrolatum absorbing medium, where it is held until needed for combination with the evaporated coffee extract.

1919 — Floyd W. Robison, Detroit, is granted a United States patent on a process for aging green coffee by treating it with micro-organisms to improve its flavor and to increase its

extractive value. The product is put on the market as Cultured coffee.

1919 — William Fullard, Philadelphia, is granted a United States patent on a "heated fresh air system" for roasting coffee.

1919 — A million-dollar propaganda for coffee is begun in the United States by Brazil planters in co-operation with a joint coffee-trade publicity committee.

1920 — The third national coffee week is observed in the United States, this time under the auspices of the Joint Coffee Trade Publicity Committee.

1920 — Edward Aborn, New York, is granted a United States patent on a Tru-Bru coffee pot, a device embodying striking improvements on the French filter principle.

1920 — Alfredo M. Salazar, New York, is granted a United States patent on a coffee urn in which the coffee is made at the time of serving by using steam pressure to force the boiling water through the ground coffee held in a cloth sack attached to the faucet.

1920 — William H. Pisani, assignor to M. J. Brandenstein & Co., San Francisco, is granted a United States patent on a vacuum process for packing roasted coffee.

1921 — The Comité Français du Café is founded in France to increase the consumption of coffee.

1922 — The São Paulo legislature at the solicitation of the Sociedade Promotora da Defeza do Café passes a bill increasing the export tax on coffee from Santos to 200 reis per bag to continue the propaganda for coffee in the United States for three years.

A COFFEE BIBLIOGRAPHY

A list of references gathered from the principal general and scientific libraries — Arranged in alphabetic order of topics

TOPICS AND SUBDIVISIONS

ADULTERATION
BOARD OF HEALTH REGULATIONS
BOTANICAL DESCRIPTION
CHEMISTRY
  ANALYSIS, GENERAL
  CAFFEIN
  CAFFEIN-FREE COFFEE
  CAFFEOL
  GREEN COFFEE
  ROASTED COFFEE
CHICORY
  CHICORY IN COFFEE
COFFEE HOUSES
CULTURE AND PREPARATION
  GENERAL
  REGIONAL
  SOILS
DISEASES AND ENEMIES
GENERAL WORKS
LITERATURE, POETRY, ROMANCE
MANUFACTURING PROCESSES
  BREWING
  GLAZING
  MISCELLANEOUS
  MODIFICATIONS
  POLISHING AND COLORING
  ROASTING AND GRINDING
MEDICINAL QUALITIES AND USES
  ANTISEPTIC AND DISINFECTANT
  GENERAL
PHYSIOLOGICAL EFFECTS
  GENERAL USE AND MISUSE
  OF CAFFEIN-FREE COFFEE
  OF CHEWING COFFEE
PHYSIOLOGICAL EFFECTS (*Continued*)
  OF DIFFERENT CONSTITUENTS
  OF GREEN COFFEE
  OF LEAVES OF COFFEE TREE
  OF ROASTED COFFEE
  OF SMOKING COFFEE
  ON CHILDREN
  ON DIFFERENT ORGANS AND SYSTEMS
SUBSTITUTES
  GENERAL
  MALT COFFEE
TAXATION, JURISPRUDENCE, ETC.
TRADE AND STATISTICS
  EXCHANGE TABLES
  GENERAL
  REGIONAL
VALORIZATION

ADULTERATION

ADULTERATION of coffee. Report of the proceedings of a public meeting held at the London Tavern, March 10, 1851. *London*, 1851.

DAFERT, FRANZ W. Las sustancias minerales del cafeto. *San José*, 1896. 33 pp. *Also*, Anales del Instituto médico nacional, 1897, III: 25, 41, 62, 78.

GRAHAM, T. and others. Chemical report on the mode of detecting vegetable substances mixed with coffee for purposes of adulteration. *London*, 1852. 22 pp. (Board of Inland Revenue).

LES FRAUDES du café dévoilées per un amateur. *Paris*.

SIMMONDS, P. L. Coffee as it is and as it ought to be. *London*, 1850.

Periodicals

BERTARELLI, E. Su una sofisticazione del caffè torrefatto mediante aggiunta di acqua e borace. Giornale di Farmacia, 1900, 338–343. *Also*, Rivista d'Igiene e Sanità pubblica, 1900, XI: 467–472.

CABALLERO, F. G. Inconvenientes del uso del café puro y del que se toma con leche; sofisticacion de los componentes de esta bebida, etc. Boletin de Medicina y Cirugia, 1851, 2 ser. I: 177–185.

CASAÑA, J. Acerca del producto llamado legumina y sofisticaciones del café. Anales de la real Academia de Medicina, 1905, XXX: 359–364.

CHIAPPELLA, A. R. Il caffè macinato che si consuma in Firenze — Alcune sofisticazioni non ancora descritte. Annali d'Igiene sperimentale, 1904, n. s. XIV: 427–448.

—Le sofisticazioni del caffè che si consuma in Firenze. Società toscana d'Igiene, 1905, n. s. V: 110–116.

CHEVALLIER, J. B. Café indigène. Annales d'Hygiène, 1853, XLIX: 408–412.

COFFEE and its adulterations. Lancet, 1851, I: 21, 465; 1853, 1: 390, 477; 1857, I: 195. *Also*, Pharmaceutical Journal, 10: 394–396.

COLLIN, E. Del caffè e sue falsificazioni. Giornale di Farmacia, di Chimica e di Scienze affini, 1879, XXVIII: 529–535; 1880, XXIX: 20–22.

CORIEL, F. Analyse d'un café artificiel torréfié. Journal de Pharmacie et de Chimie, 1897, 6. ser. VI: 106–108.

CRIBB, C. H. Note on (1) samples of coffee containing added starch; (2) a sample of artificial coffee berries. Analyst, 1902, XXVII: 114–116.

CROMBIE, S. Examination of ground coffee as found in shops. Physician and Surgeon, *Ann Arbor*, 1882, IV: 401.

DOOLITTLE, R. E. Coffee sophistications. Tea and Coffee Trade Journal, 1912, XXIII: Supplement to no. 6, 62–65.

DRAPER, J. C. Coffee and its adulterations. New York Academy of Medicine. Bulletin, 1869, III: 210–218.

DUBRISAY. Falsifications des cafés, procédés employés à cet effet; moyens de reconnaître et de reprimer la fraude. Recueil des travaux du Comité consultatif d'Hygiène publique de France, 1888, XVIII: 19–38.

DUCROS, H. A. De quelques falsifications du café Moka. Institute égypt. Bulletin, 1901, 4. ser. pp. 293–306.

EDSON, C. Report on colored imitation Java coffee. Sanitary Engineer, 1883-4, IX: 614.

ESTUDIO del cafeto. Anales del Instituto médico nacional, 1897, III: 139-144.

FALSIFICATION du café. Annales d'Hygiène, 1864, 2. ser. XXII: 437–443.

FRICKE, E. Neuere Kaffeeverfälschung. Zeitschrift für Medizinalbeamte, 1889, II: 178.

GIRARDIN, J. Rapports sur un café avarié par l'eau de mer et sur poudre destinée à remplacer le café. Annales d'Hygiène, 1884, XI: 87–103.

GRIEBEL, C. and BERGMANN, E. Ueber eine neue Kaffeeverfälschung. Zeitschrift für Untersuchung der Nahrungs- und Genussmittel, 1911, XXI: 481–484.

HARNACK, E. Ueber die besonderen Eigenarten des Kaffeegetränkes und das Thurmsche Verfahren zur Kaffeereinigung und verbesserung. Münchener medizinische Wochenschrift, 1911, LVIII: 1868-1872.

HARRIS, WILLIAM B. Green and roast coffees, the adulteration and misbranding thereof. American Grocer, 1918, Nov. 19, pp. 19–20.

HESSE, P. Ueber eine Kaffeefarbe. Zeitschrift für Untersuchung der Nahrungs- und Genussmittel, 1911 XXI: 220.

JAMMES, L. Le café torréfié, en grains, factice. Revue d'Hygiène, 1890, XII: 1044–1050.

MOCHA coffee. Scientific American, 1908, LXXXIX: 81.

MUNITA, V. Apuntes acerca de las adulteraciones del café y medios para reconocerlas. La Gaceta de Sanidad militar, 1888, IX: 286, 894.

NOTTBOHM, F. E. and KOCH, E. Arsenhaltige Kaffeeglasierungsmittel. Zeitschrift für Untersuchung der Nahrungs- und Genussmittel, 1911, XXI: 288–290.

OTTOLENGHI, D. Sopra una frequente sofisticazione del caffé in polyere. Atti della reale Accademia dei Fisiocritici di Siena, 1908, 4. ser. XV: 881–889.

PARECER do commissão encarregada pela Sociedade pharmaceutica lusitana de investigar se uma determinada èspecie de café é prejudicial á saude 185. *Also*, Correio medica de Lisboa, 1874, III: 136, 147.

RAUMER, E. VON. Beobachtungen über Kaffeeglasuren seit dem Inkrafttreten der Kaffeesteuer. Zeitschrift für Untersuchung der Nahrungs- und Genussmittel, 1911, XXI: 102–109.

REISS, F. Ueber eine mechanische Verfälschung der Kaffeesahne. Zeitschrift für Untersuchung der Nahrungs- und Genussmittel, 1906, XI: 391–398.

SOCCIANTI, L. Caffè adulteraro con sostanze nocive. Rivista d'Igiene e Sanità pubblica, 1895, VI: 497–499.

SORMANI. Di un nuova falsificazione del caffè. Giornale della reale Società italiana d'Igiene, 1882, IV: 401.

SPENCER, G. L. and EWELL, E. E. Tea, coffee, and cocoa preparations. U. S. Dept. of Agriculture. Division of Chemistry. Bulletin, XIII, pt. 7.

VARIOUS "coffees." Lancet, 1915, II: 1006.

VOGEL VON FERHEIM, A. Zur Frage der Zulässigkeit der Verwendung der sagenannten tauben oder Strohfeigen bei der Feigen Kaffeefabrikation. Oésterreichische Sanitätswesen, 1903, XV: 101–102.

WIECHMANN, F. Coffee and its adulterations. School of Mines Quarterly, 1897-8, I: 8–15.

BOARD OF HEALTH REGULATIONS

SCHNEIDER. Der Kaffee, als Gegenstand der medicinischen Polizei. Zeitschrift für die Staatsarzneikunde, 1829, IV: 803–827.

SCHÜTZE. Kaffee, Thee und Chocolade, als Nahrungsmittel und in sanitäts-polizeilicher Hinsicht. Viertel jahrsschrift für gerichtliche Medizin und öffentliches Sanitätswesen, 1860, XVII: 168–228.

WEITENWEBER, W. R. Medicinisch-poliseiliche Bemerkungen über den Caffee. Medicinische Jahribücher des kaiserl. königl. österreichischen Staates, 1848, LXVI: 42, 151.

BOTANICAL DESCRIPTION

COFFEA *stenophylla*. Royal Botanic Gardens, *Kew*, Bull. of Misc. Information, 1898:27.

COOK, ORATOR FULLER. Dimorphic branches in tropical crop plants: cotton, coffee, cacao, the Central American rubber tree, and the banana. *Washington*, 1911. 64 pp. (U. S. Plant Industry Bureau. Bulletin, 198.)

DAFERT, FRANZ W. Mittheilung aus dem Landwirthschaftsinstitut des Staates São Paulo, Brasilien. Der Nahrstoff des Kaffeebaumes. Landw. Jahrb. 1894, XXIII: 27-45.

DOUGLAS, JAMES. Lilium sarniense: or, a description of the Guernsay-lilly. To which is added the botanical dissection of the coffee berry. *London*, 1725. 59 pp.

LAROQUE, JEAN. Voyage de l'arabie heureuse, par l'Ocean Oriental, & le détroit de la Mer Rouge. Fait par les François dans les années 1708, 1709 and 1710. Avec la relation d'un voyage fait du port de Moka à la cour du roy d'Yemen dans la 2. Expedition des années 1711, 1712 and 1713. Un mémoire concernant l'arbre et le fruit du café. *Paris*, 1716. 403 pp. Also in English, *London*, 1726.

LA ROQUE. Gruendliche und sichere Nachricht vom Cafee- und Cafee-Baum. *Leipzig*, 1717.

LIBERIAN coffee. Royal Botanic Gardens, *Kew*, Bull. of Misc. Information, 1895:296-299.

MCCLELLAND, T. B. The botany of coffee. Tea and Coffee Trade Journal, 1912, XXII: 28–35.

MARIANA, J. Les caféiers; structure anatomique de la feuille. *Paris*, 1908.

NATURAL caffein-free coffee. Tea and Coffee Trade Journal, 1912, XXIII: 230–233.

NATURAL history of coffee, thee, chocolate, tobacco with a tract of elder and juniper berries. *London*, 1682.

A NEW hybrid Ceylon coffee. Tea and Coffee Trade Journal, 1916, XXX; 232-233.

SLOANE, Sir HANS. On the Bird the Cuntur of Peru and on the Coffee Shrub. *London*, 1694.

WILDEMAN, É. DE. Notes sur quelques espèces du genre Coffea L. Cong. internat. d. botanique. Actes, 1900, I: 221–238.

CHEMISTRY

ANALYSIS, GENERAL

ALLEN, A. H. Commercial organic analysis. *London*, 1892. (v. 3 pt. 2 contains a chapter on vegetable alkaloids, including coffee.)

ANDALORI, ANDRÉ. Il café descritto ed esaminato. *Messine*, 1702.

BOUSSINGAULT, J. B. J. D. Sur les matières sucrées contenues dans le fruit du caféier. Ann. Inst. Nat. Agron., 1878-79, IV: 1-4.

CAFFÈ DI GIRASOLE: analisi chemiche, consigli agronomici, etc. *Padova*, 1881.

COFFEE and chicory. Science readers and diagrams. Ser. 6, no. 3.

GALEANO, JOSEPH. Il caffè, con piu diligenza esaminato. *Palerme*, 1674.

GRIEBEL, C. Ueber den Kaffeegerbstoff. *Munchen*; 1903.

KÖNIG, J. Chemie der menschlichen Nahrungs- und Genussmittel. 4th ed. *Berlin*, 1904. See v.2, index for Kaffee, Koffeïn.

LOCKE, EDWIN A. Food values. *New York*, 1911. Coffee analysed p. 54.

LYTHGOE, HERMANN CHARLES. Report on tea and coffee. *Washington*, 1905.

MARCHAND, N. L. Recherches organographiques et organogéniques sur le Coffea arabica L. *Paris*, 1864.

SESTINI, J. Il caffé; lettura fatta nell' institutio tecnico di Fochi. *Firenze*, 1868.

STANDARDS of purity for food products. Tea, coffee and cocoa products. U. S. Dept. of Agriculture. Office of the Secretary. Circ. 19, p. 16.

THORPE, EDWARD. Dictionary of applied chemistry. *London and New York*, 1912. See pp. 97–103.

WANKLYN, JAMES ALFRED. Tea, coffee, and cocoa: a practical treatise on the analysis of tea, coffee, cocoa, chocolate, maté (Paraguay tea). *London*, 1874. 59 pp.

WARNIER, W. L. A. Bijerage tot de kennis der koffie, mededeeling uit het laboratorium van het Kolonial museum te Haarlem. *Amsterdam*, 1899. 23 pp.

WEYRICH, R. Ein Beitrag zur Chemie des Thees und Kaffees. *Dorpat*, 1872.

WILEY, H. W. Coffee and tea. In his, 1001 Tests of food, beverages and toilet accessories. pp. 10–18.

WINTON, ANDREW L. The microscopy of coffee. In his, Microscopy of vegetable foods, *New York*, 1916. 2 ed. pp. 427–438. Reprinted, Tea and Coffee Trade Journal, XXI: 22-28.

Periodicals

ALLEN, A. H. Note on the examination of coffee. Analyst, 1880, V: 1–4.

BAU, A. The determination of oxalic acid in tea, coffee, marmalade, vegetables and bread. Z. Nahr. Genussm, 1920, 40: 50-66.

BERTRAND, GABRIEL. Sur la composition chimique du café de la Grande Comore. Comptes rendus de l'Académie des Sciences, 1901, CXXXII: 162–164.

BINZ, C. Beiträge zur Kenntniss der Kaffeebestandtheile. Archiv für experimentelle Pathologie und Pharmakologie, 1878, IX: 31–51.

BÖTSCH, K. Zur Kenntniss der Saligeninderivate. Monatshefte für Chemie (Sitzungs berichte der Kaiserlichen Akademie der Wissenschaften) 1880, I: 621–623.

CANADA (DOMINION). INLAND REVENUE DEPARTMENT LABORATORY. Coffee: results of analysis. *Ottawa*, 1888. Bulletin, 3. 8 pp.; 1891, Bulletin, 29. 19 pp.; 1892, Bulletin 31. 13 pp.

—Ground coffee: results of analysis. *Ottawa*, 1904, Bulletin, 100. 7 pp.; 1909, Bulletin, 172. 37 pp.; 1910, Bulletin, 216. 22 pp.

CAZENEUVE, P. and HADDON. Sur l'acide cafétannique. Comptes rendus de l'Académie des Sciences, 1897, CXXIV: 1458–1460.

CHARAUX, CHARLES. Sur l'acide chlorogénique. Fréquence et recherche de cet acide dans les végétaux. Extraction de l'acide caféique et rendement en l'acide caféique de quelques plantes. Journal de Pharmacie et de Chemie, 1900, 7. ser, II: 292–298.

THE CHEMISTRY of a cup of coffee. Lancet, 1913, II, no. 2: 1563-1565. Reviewed in, Journal of Economics, 1914, VI: 466-467; Literary Digest, 1914, XLVIII: 376–377.

DOOLITTLE, R. E. and WRIGHT, B. B. Some effects of storage on coffee. American Journal of Pharmacy, 1915, LXXXVII: 524–526.

EHRLICH, J. Coffee in the laboratory. Tea and Coffee Trade Journal, 1916, XXX: 569–570.

ERNI, H. The chemico-physiological relations of tea, coffee and alcohol. Nashville Monthly Record of Medical and Physical Science, 1858-9, I: 641–656.

FRANKEL, E. M. Coffee by-products. Tea and Coffee Trade Journal, 1917, XXXIII: 43–44.

—Coffee identification. The Tea and Coffee Trade Journal, 1916, XXXI: 158 159.

FRANKEL, F. HULTON. Calories in a cup of coffee. Tea and Coffee Trade Journal, 1916, XXXI: 446–447.

GEISER, M. Welche Bestandteile des Kaffees sind die Träger der erregenden Wirkung? Archiv für experimentelle Pathologie und Pharmakologie, 1905, LIII: 112-136.

GORTER, K. Beiträge zur Kenntniss des Kaffees. Annalen der Chemie, 1907, CCCLVIII: 327-348; 1908, CCCLIX: 217–244; 1910, CCCLXXII: 287–246. Also, East Indies, Dutch. Dept. van Landbouw. Bulletins, 14, 33.

GRAF, L. Ueber Bestandtheile der Kaffeesauen. Zeitschrift für angewandete Chemie, 1901, pp. 1077–1082.

—Ueber den Zusammenhang von Coffëingehalt und Qualität bei chinesischem Thee. Forschungs-Berichte über Lebensmittel, 1897, IV: 88.

GUIGUES, P. Note sur l'origine du café. Bulletin des Sciences pharmacologiques, 1903, VII: 350–357.

HANAUSEK, T. F. Bemerkung zu dem Aufsatz von F. Netolitzky: Ueber das Vorkommen von Krystallsandzellen im Kaffee. Zeitschrift für Untersuchung der Nahrungs- und Genussmittel, 1911, XXI: 295.

—Die Entwickelungsgeschichte der Frucht und des Samens von Coffea arabica L. Zietschrift für Nahrungsmittel Untersuchung und Hygiene, 1890, IV: 237–257.

HARRIS, WILLIAM B. Scientific study of coffee. Tea and Coffee Trade Journal, 1915, XXIX: 557–558.

HEHNER, O. An analysis of coffee leaves. Analyst, 1879, IV: 84.

HOWARD, C. D. Report on tea and coffee. U. S. Chemistry Bureau. Bulletin, 1907, CV: 41–45.

HUSSON, C. Étude sur le café, le thé, et les chicorées. Annales de Chimie et de Physique, 1879, 5. ser. XVI: 419–427.

JAFFA, M. E. Report on tea and coffee, 1910, with list of references. U. S. Chemistry Bureau. Bulletin, 1911, CXXXVII: 105–108.

LANCET special analytical sanitary commission on the composition and value of coffee extracts, The. Lancet, 1894, II: 43–45.

LEPPER, H. A. Report on coffee. Journal of the Association of Official Agricultural chemists, 1920, 4:211-216.

LEVESIE, O. Beiträge zur Chemie des Kaffees. Archiv der Pharmacie, 1876, 3 ser. VIII: 294–298.

LIEBIG, J. von. Chemistry of a cup of coffee. Every Saturday, I: 135.

LOOMIS, H. M. Report on tea and coffee. Journal of the Association of Official Agricultural Chemist, 1920, 3:498-503.

MASON, G. and SAVINI E. Experiments with coffee. Staz. sper, agrar. ital., 1918, 51:413-4.

MAZZA, C. Sull' esame batteriologico della polvere che si trova negli spacci di caffè, con speciale riguardo al bacillo della tubercolosi. Rivista d'Igiene e Sanità pubblica, 1897, VIII: 8-20.

PALADINO, PIETRO. Sopra un nuovo alcaloide contenuto nel caffè. Gazette Chimica Italiana, XXV: 104-110. Summarized in, Beilstein's Organische Chemie, 1897, III: 888.

PARET, S. A. Quelques résultats obtenus par l'emploi du valerianate de caféine (thèse). *Paris*, 1874.

PAYEN, ÉDOUARD. Mémoire sur le café. Comptes vendus de l'Académie des Sciences, 1846, XXII: 724–732; XXIII: 8-15, 144-251.

PRATT, DAVID S. The microscopy of tea and coffee. Tea and Coffee Trade Journal, 1915, XXIX: 419–421.

PRESCOTT, A. Chemistry of tea and coffee. Popular Science Monthly, XX: 359.

ROBIQUET, VON, and BOUTRON. Ueber den Kaffee. Annalen der Chemie, 1837, XXIII: 93–95.

ROBISON, FLOYD W. What do we know about coffee? Tea and Coffee Trade Journal, 1916, XXXI: 556–562.

SAYRE, L. E. A pharmacologist on coffee. Tea and Coffee Trade Journal, 1917, XXXII: 521–527.

—Coffee, its standardization and application to pharmacy. Merck's Report, 1907, XVI: 61-63.

SOME new facts about coffee. The Tea and Coffee Trade Journal, 1918, XXXV: 436-437.

STREET, JOHN PHILLIPS. About hygienic coffees. Tea and Coffee Trade Journal, 1916, XXXI: 52-54.

—Hygienic coffee analyses. Tea and Coffee Trade Journal, 1917, XXXIII: 42-43.

—Recent coffee analyses. Modern Hospital, 1916: 330-332. Reprinted in Tea and Coffee Trade Journal. XXX: 570-572.

TATLOCK, R. R. and THOMSON, R. T. The analysis and composition of coffee, chicory, and coffee and chicory "essences." Journal of the Society of Chemical Industries, 1910, XXIX: 138–140.

TRIGG, CHARLES W. Caffetannic acid a bugaboo. Tea and Coffee Trade Journal, 1917, XXXIII: 437-439.

—Coffee oil and fats. The Tea and Coffee Trade Journal, 1918, XXXV: 230-231.

—Coffee carbohydrates. The Tea and Coffee Trade Journal, 1919, XXXVI: 246-247.

TUSINI, F. Sul riconoscimento delle varie specie di grani di caffè, mediante la misurazione delle cellule del reticolo albuminoideo e dello spermoderma. Archivio di Farmacologia sperimentale e Science affini, 1903, II: 215–217.

VAUTIER, E. The wastes of coffee. Mitt. Lebensm. Hyg., 1921, 12:35-37.

VAN DER WOLK, P. C. New researches into some statistics of Coffea. Zeitschrift für induktive Abstammungs- und Vererbungslehre, 1914, XI: 355-359.

VLAANDEREN, C. L. and MULDER, G. J. Säuren des Kaffee's. Jahresbericht der Chemie, 1858: 261–264.

WARNIER, W. L. A. Contributions à la connaissance du café. Recueil de Travaux chimiques du Pays-Bas de la Belgique, 1899, 2. ser. III: 351–357.

WILLCOX, O. W. Coffee aroma secret out. Tea and Coffee Trade Journal, 1918, XXV: 343–344.

—Tannin in coffee. Tea and Coffee Trade Journal, 1913, XXV: 485.

WILLCOX, O. W. and RENTSCHLER, M. J. Scientific analysis of coffee. Tea and Coffee Trade Journal. 1910. XIX: 440-443; 1911, XX: 30-34, 109-111, 194–195, 355–356.

WOODMAN, A. G. Report on tea, coffee, and cocoa products, 1909. U. S. Chemistry Bureau. Bulletin, 1910, CXXXII: 134–136.

CAFFEIN

CLAUTRIAU, G. Nature et signification des alcaloides végétaux. *Paris*, 190?:113.

DRAGENDORFF, GEORG. Caffein und Theobromin. In his, Die gerichtlich- chemische Ermittelung von Giften, pp. 202-206.

FENDLER, G. and STÜBER, W. Coffeïnbestimmungen im Kaffee. Zeitschrift für Untersuchung der Nahrungs- und Genussmittel, 1914, XXVIII: 9–20.

FISCHER, EMIL. Ueber das Caffeïn. Berichte der deutschen chemischen Gesellschaft, 1882, XV, no. 5: 29–37.

FRANKEL, E. M. Caffeine and theine. Tea and Coffee Trade Journal, 1916, XXXI: 260.

FRENCH, J. M. Caffein, its sources and uses. Merck's Archives, 1907, IX: 208.

JOBST, CARL. Thein identisch mit Caffein. Annalen der Chemie, 1838, XXV: 63–66.

LANGLOIS, P. Kola et caféine. La Science Illustrée, July, 1890.

LENDRICH, K. and NOTTBOHM, E. Verfahren zur Bestimmung des Coffeïns im Kaffee. Zeitschrift für Untersuchung der Nahrungs- and Genussmittel, 1909, XVI: 241–265.

PAUL, B. H. and COWNLEY, A. J. The amount of caffeine in various kinds of coffee. Pharmaceutical Journal, 1887, 3 ser. XVII: 565.

PFAFF, C. H. Ueber die Darstellung des Coffeïns, über dessen charakteristische Eigenschaften und dessen Mischung, über zwei Säuren im Kaffee, so wie uber das sogenannte Kaffee-Grün. Neues Jahrbuch der Chemie und Physik, 1831, I: 487–503; II: 31–45.

POISTORFF, KARL. Ueber das Vorkommen von Betainen und von Cholin in Kaffein und Theobromin enthaltenden Drogen. Chemisches Zentralblatt, 1909, 5 ser. XIII: 2014–2015.

STEHLE, R. L. Caffeine, the alkaloid. Tea and Coffee Trade Journal, 1917, XXXII: 46–47.

SULLIVAN, A. L. Determination of caffein in coffee, a comparison of the Hilger and Fricke method with a modification of the Gomberg method. Science, 1909, XXX: 255.

WILLCOX, O. W. Coffee and caffein. Tea and Coffee Trade Journal, 1913, XXIV: 460–461.

CAFFEIN-FREE COFFEE

RABENHORST, W. and VARGES, J. Koffeinfreier Kaffee; enthalt der kaffeinfreie Kaffee fremde chemische Bestandteile, insbesondere Ammoniak, Benzol, Salzsäure, Schwefelsäure? Medizinische Klinik, 1908, IV: 1612.

SALANT, WILLIAM, and RIEGER, J. B. Elimination of caffein: an experimental study of herbivora and carnivora. U. S. Dept. of Agriculture. Chemistry Bureau. Bulletin, CLVII.

TRIGG, CHARLES W. About caffein-free coffee. Tea and Coffee Trade Journal, 1918, XXXIV: 233.

WILLCOX, O. W. "Caffein-free" coffee. Tea and Coffee Trade Journal, 1911, XX: 116.

Caffeol

Bernheimer, Oscar. Zur Kenntniss der Röstproducte des Caffees. Monatshefte für Chemie (Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften) 1880, I: 456-457.

Bertrand, G. and Weisweiller, G. Sur la composition de l'essence de café; présence de la pyridine. Comptes rendus de l'Académie des Sciences, 1913, CLVII: 212–213. *Also,* Bulletin des Sciences pharmacologiques, 1905, XII: 152.

Erdmann, Ernst. Ueber das Kaffeöl und die Physiologische Wirkung des darin enthaltenen Furfuralkohols. Archiv für experimentelle Pathologie und Pharmakologie, 1902, XLVIII: 233-261. *Also,* Berichte der deutschen chemischen Gesellschaft, 1902, XXXV: 1846.

—Beitrag zur kenntniss der kaffeeöles und des darin enthaltenen furfuralkohols. *Halle,* 1902: 46.

Grafe, V. Untersuchung über die Herkunft des Kaffeols. Anzeizer der Kaiserlichen Akademie der Wissenschaften, 1912, XLIX: 267–268.

Jaekle, H. Studien über die Produkte der Kaffeeröstung ein Beitrage zur Kenntniss des sogenannte Kaffeearomas (Caffeol.) Zeitschrift für Untersuchung der Nahrungs- und Genussmittel, 1898, 457–472.

Orlowski, A. Kilka slor o kawie palonéj. (Extract of Coffee). Gazeta Lekarska, *Warsaw,* 1870, IX: 385–387.

The Caffeol in roasted coffee. Tea and Coffee Trade Journal, 1913, XXIV: 241.

Trigg, Charles W. The aroma of coffee. Tea and Coffee Trade Journal, 1918, XXXV: 37-39.

Green Coffee

Bittó, Bela von. Ueber die chemische Zusammensetzung der inneren Fruchtschale der Kaffeefrucht. Jour. Landw. III: 93-95.

Herfeldt, E. and Stutzer, A. Untersuchungen über den Gehalt der Kaffeebohnen an Fett, Zucker und Kaffeegerbsäure. Zeitschrift für angewandte Chemie, 1895, 469–471.

Meyer, H. and Eckert, A. Ueber das fette Öl und das Wachs der Kaffeebohnen. Summarized in, Anzeiger der Kaiserlichen Akademie der Wissenschaften, 1910, XLVII: 320.

Rochleder, F. Notiz über die Kaffeebohnen. Annalen der Chemie, 1844, L: 244–284; 1846, LIX: 300–310; 1852, LXXXII: 194.

Trigg, Charles W. Aging green coffee. Tea and Coffee Trade Journal, 1920, XXXIX: 440.

Zwenger, C. and Siebert, S. Ueber das Vorkommen der Chinasäure in den Kaffeebohnen. Annalen der Chemie, 1861, 1 sup. pp. 77–85.

Roasted Coffee

Burmann, J. Recherches chimiques et physiologiques sur les principes nocifs du café torréfié. Bulletin général de Thérapeutique, 1913, CLXVI: 379–400.

Ehrlich, J. In a cup of coffee. A consideration of the constituents of the roasted bean and of the sugar, milk or cream that goes with it. Tea and Coffee Trade Journal, 1916, XXX: 547–549.

Goblet, L. Analyses comparées d'un café torréfié par des procédés différents. Association Belge des Chimistes. Bulletin, 1899, XIII: 172-178.

Gould, R. A. The gases evolved from roasted coffee, their composition and origin. Eighth International Congress of Applied Chemistry. Report, 1912, XXVI: 389.

Lendrich, K. and Nottbohn, E. Ueber den Coffeïngehalt des Kaffees und den Coffeïnverlust beim Rösten des Kaffees. Zeitschrift für Untersuchung der Nahrungs- und Genussmittel, 1909, XVIII: 299–308.

Lythgoe, H. Chemical analyses of a few varieties of roasted coffee. Technology Quarterly, 1905, XVII: 236–239.

Monari, A. and Scocclanti, L. La pyridine dans les produits de la torréfaction du café. Congrès international d'Hygiène et de Démographie. Comptes rendus, 1894, VIII: pt. 4, 211. *Also,* Archives italiennes de Biologie, 1895, XXIII: 68–70; Chemisches Zentralblatt, 1895, I: 750.

Trigg, Charles W. Coffee roasting. Tea and Coffee Trade Journal, 1919, XXXVII: 170-172.

—Gases from roasted coffee. Tea and Coffee Trade Journal, 1920, XXXIX: 318.

CHICORY

Backer, P. La culture du witloof. *Thielt,* 1912: 22.

—De teelt van witloof. *Thielt,* 1911: 23.

Boruttau, H. Die physiologische Wirkung des Absudes der gebrannten Zichorie. Medizinische Klinik, 1907, III: 644–647.

Fries, M. Praktische Anleitung zum Kaffee Cichorienbau. *Stuttgart,* 1886.

Kains, M. G. Chicory growing. *Washington,* 1900: 12.

—Chicory growing as an addition to the resources of the American farmer. *Washington,* 1898: 52.

Schmiedeberg, Oswald. Historische und experimentelle Untersuchungen über die Zichorie und den Zichorienkaffee in diätetischer und gesundheitlicher Beziehung. Archiv für Hygiene, 1912, LXXVI: 210–244.

Weismann, R. Ueber den schädlichen Einfluss von Zichorienaufguss. Aerztliche Rundschau, 1908, XVIII: 183.

Zellner, H. Zichorie. Centralblatt für allgemeine Gesundheitspflege, 1908, XXVII: 32–39.

Chicory in Coffee

Cauvet. Sur l'examen et l'analyse des échantillons de café-chicorée et de café moulu saisis chez divers marchands de Constantine. Annales d'Hygiène, 1873, XI: 302–317.

Chevallier, A. Notice historique et chronologique sur les substances qui ont été proposées comme succédanées du café et sur le café-chicorée en particulier. Moniteur d'Hôpitaux, 1853, I: 1129, 1161, 1171, 1185, 1193, 1217.

Cloüet, J. Du café-chicorée; empoisonnement de quatre personnes par l'usage de cette denrée. Mouvement médicale, 1875, XIII: 505.

Forsey, C. B. The new coffee and chicory regulations. Analyst, 1882, VII: 159.

Guillot, Camille. La chicorée et divers produits de substitution du café. *Lons-le-Saunier,* 1911. 352 pp.

Lawall, C. H. and Forman L. The detection of chicory in decoctions of chicory and coffee. Journal of the American Pharmaceutical Association, 1914, III: 1669.

Leebody, J. R. Estimation of chicory in coffee. Chemical News, 1874, XXX: 243.

Morin. Quelques réflexions sur un des moyens employés pour déterminer la présence du café chicorée dans le café normal. *Rouen,* 1863. 5 pp. (Extrait des Mémoires de l'Academie de Caen.)

On the adulteration of chicory and coffee. Lancet, 1861, II: 18.

COFFEE HOUSES

BREWSTER, H. POMEROY. The coffee houses and tea gardens of old London. *Rochester*, 1888.

CAFÉS de Paris par un flaneur patenté. 1849.

COFFEE public house, The. How to establish and manage it. *London*, 1878. 84 pp.

COFFEE stalls and taverns: hints on coffee stall management. *London*, 1886. 40 pp.

COLMAN, GEORGE, and THORNTON, B. Survey of the town. . . . Garraway's, Batson's St. Paul's, and the Chapter coffee houses. In their, The Connoisseur. *Oxford*. 1757, I:1-10.

DAFERT, F. W. Erfahrungen über rationellen Kaffeebau. *Berlin*, 1896. 36 pp. 2nd ed., 1899. 60 pp.

DELVAU. Histoire anecdotique des cafés et cabarets de Paris. 1861.

HAWES, C. W. Handbook to coffee taverns. *Uxbridge*, 1888. 17 pp.

MACAULAY, T. B. (Coffee houses in the 17th and 18th centuries.) In his, History of England. I:334–336.

MICHEL, FRANCISQUE, et FOURNIER, ÉDOUARD. Histoire des hôtelleries, cabarets et cafés. 1854.

REID, THOMAS WILSON, ed. Traits and stories of Ye Olde Cheshire Cheese. *London*, 1886. 188 pp.

ROBINSON, EDWARD FORBES. Early history of coffee houses in England. *London*, 1893. 240 pp.

SHELLEY, CHARLES HENRY. Inns and taverns of old London. *Boston*, 1909. 866 pp.

—Old Paris. *Boston*, 1912.

TIMBS, J. Clubs and club life in London, with anecdotes of its famous coffee houses, hostelries and taverns. *London*, 1866. 2v. 2nd ed., 1872. 1v. 544 pp.

Periodicals

ANDREWS, A. Coffee houses and their clubs in the 18th century. Colburn's New Monthly Magazine, CVI:107.

BETHEL CHRISTIAN MISSION, Providence. Annual report. . . . constitution, by-laws, etc.

BUSS, GEORGE. Kaffee und Kaffeehäuser. Westerman's Monatshefte, Sept. 1908: 805-821.

COFFEE house movement. Chambers' Journal, LVI:143.

COFFEE house news. London Magazine, XX:563.

COFFEE houses of old London. The Tea and Coffee Trade Journal, 1918, XXXV:116-125.

COFFEE Houses of old New York. The Tea and Coffee Trade Journal, 1920, XXXVIII:160-174.

COFFEE Houses of old Philadelphia. The Tea and Coffee Trade Journal, 1920, XXXVIII: 308-312.

COFFEE houses of the Restoration. Tait, n. s. XXII:104; Ecclesiastical Magazine, XXIV:500.

COFFEE palaces. All-the-Year, LII:520.

EARLY Parisian coffee houses. The Tea and Coffee Trade Journal, 1918, XXXV:526-534.

FOX, S. Coffee club movement in California. Arena, XXXII:519.

GRAHAM, R. Coffee houses as a counter action to the saloon. Charities Review, I:215.

HALL, E. H. Coffee taverns. Leisure Hour, XXVIII:301.

HILL, E. Coffee and coffee houses. Gentleman's Magazine, n. s. LXXI:47.

HOLLAND and the café Krasnapolsky at Amsterdam. Idler, 1899, XVI:31-39.

HOPE, LADY. Coffee rooms for the people. Good Words, XXI: 749, 844.

HOWERTH, I. W. Coffee house as a rival of the saloon. American Magazine of Civics. VI: 589.

HUMPHREYS, J. Coffee houses. St. James Magazine, XLIII: 598.

JARVIS, A. W. Old London coffee houses. English Illustrated Magazine, 1900, XXIII: 107–114.

PAGE, H. A. Coffee palaces. Good Words, XVIII: 678.

RODENBERG, J. Die kaffeehæuser und clubs von London. Unsere Zeitung, 1866, II:177-265.

SCHMITT, E. Volkskuechen und speiseanstalten fuer arbeiter; Volkskaffeehæuser. Handbook der Architek, 4 theil, IV:116.

SIKES, W. English coffee palaces. Lippincott's Magazine, XXIV:728.

SOME old London coffee houses. Cornhill Magazine, LVI:527.

STEVENS, J. A. Coffee houses of old New York. Harper's Magazine, LXIV:481.

SWEETSER, ARTHUR LAWRENCE. The coffee house plan. Gunton's Magazine, 1901, XXI: 239–245.

THOMAS, C. EDGAR. Some London coffee houses. Home Counties Magazine, 1911, XIII: 1–9, 91–100.

WAGNER, H. Shankstætten und speisewirtschaften; Kaffeehæuser und restaurants. Handbook der Architek, 4 theil, IV:116 pp.

CULTURE AND PREPARATION

General

AMERICAN COFFEE GROWERS' ASSOCIATION. Coffee growing by proxy. *New York*, 1895. 80 pp.

ARNOLD, EDWIN LESTER LINDEN. Coffee: its cultivation and profit. *London*, 1886. 270 pp.

BOËRY, PASCAL. Les plantes oléagineuses et leurs produits; cacao, café. . . . *Paris*, 1888.

BOURGOIN D'ORLI, P. H. F. Guide pratique de la culture du caféier et du cacaoyer suivi de la fabrication du chocolat. *Paris*, 1876.

BROUGIER, A. Der Kaffee, dessen Kultur und Handel. 1897.

BROWN, ALEXANDER. The coffee planter's manual, with which is added a variety of information useful to planters, including the manuring of coffee estates. *Colombo*, 1880. 246 pp.

BROWNE, D. J. On the cultivation of coffee. *Washington*, 1859. 12 pp.

BURLAMAQUI, FREDERICO LEOPOLDO CÉSAR. Monographia do caféeiro e do café. *Rio de Janeiro*, 1860. 62 pp.

CAMOUILLY. La plantation du café, en Nouvelle Calédonia. *Paris*, 1899.

CIVINNI, G. D. Delle storiæ naturæ del caffè. *Firenze*, 1731.

COOK, ORATOR FULLER. Shade in coffee culture. *Washington*, 1901. 79 pp.

CUEVAS, HILARIO. Estudio práctico sobre el cultivo del café. *México*, 1895. 50 pp.

CUNHO, AGOSTINO RODRIGUEZ. De l'art de la culture du café et de sa propagation. *Rio de Janeiro*, 1844.

D'ORLI, P. H. F. BOURGOIN. Culture du café, etc. *Paris*, 1874.

FAUCHÈRE, A. Culture pratique du caféier et preparation du café. *Paris*, 1908. 198 pp.

FERGUSON, JOHN. The coffee planter's manual for both the Arabian and Liberian species. *Colombo*, 1898. 312 pp.

FUCHS, M. Die geographische Verbreitung des Kaffeebäume. *Leipzig*, 1886. 72 pp.

GARVENS, WILHELM. Kaffee: Kultur, Handel und Bereitung im Produktionslande. 2 ed. *Hannover*, 1913. 45 pp.

GREAT BRITAIN. Parliament, House of Commons. First report from the Select committee on sugar and coffee planting, *London*, 1848:8v.
—Supplement to the report. *London*, 1848. 198 pp.
HANSON, R. Culture and commerce of coffee. *London*, 1877.
HERRERA, RAFAEL. Estudio sobre la producción del café. *México*, 1893. 141 pp.
HUNTINGTON, L. M. Origin of oily coffee beans. The Tea and Coffee Trade Journal, 1917, XXXIII: 228.
INTERNATIONAL BUREAU OF THE AMERICAN REPUBLICS, *Washington, D. C.* Coffee in America. Methods of production and facilities for successful cultivation in Mexico, the Central American states, Brazil and other South American countries, and the West Indies. 1893. 36 pp.
JACOTOT, A. La culture du café, son avenir dans les colonies françaises. *Paris*, 1910. 191 pp.
JIMENEZ NUNEZ, ENRIQUE. Medios práctios para evitar que las mieles de café infecten las aguas de los rios. *Guadalupe*, 1902.
JOTAPEN, JOSÉ. Cultivation and preparation of coffee for the market. *Aberdeen*, 1915. 102 pp.
JUMELLE, HENRI. Plantes à sucre, café, cacao, thé, maté. In his, Les cultures coloniales. *Paris*, 1913. v.3.
KRAMERS, J. G. Verslag omtrent de proeftuinen en andere mededeelingen over koffie. *Batavia*, 1899 1904. 4v.
LAERNE, C. F. VAN DELDEN. Brazil and Java. Report on coffee culture in America, Asia and Africa, to H. E. the minister of the colonies. *London*, 1885. 637 pp. Also in Dutch and French.
LASCELLES, ARTHUR ROWLEY WILLIAM. A treatise on the nature and cultivation of coffee; with some remarks on the management and purchase of coffee estates. *London*, 1865. 71 pp.
LE COMTE, C. E. A. Culture et production du café dans les colonies. *Paris*, 1865.
LECOMTE, HENRI. Le café: culture, manipulation, production. *Paris*, 1899. 342 pp.
LIEVANO, INDALECIO. Instruccion popular sobre meteorolojia agricola, i especialmente sobre el añil i el café. *Bogota*, 1868. 18 pp.
McCLELLAND, T. B. Effect of different methods of transplanting coffee. *Washington*, 1917. 11 pp.
—Some profitable and unprofitable coffee lands *Washington*, 1917. 13 pp.
McCULLOCH, R. WILLIAM. Coffee-growing and its preparation for market. *Brisbane, Australia*, 1893.
MADRIZ, F. J. Cultivo del café seu manual theorico-pratico sobre beneficio de este frute con mayores ventajas para al agricultor. *Paris*, 1869.
MEITZKY, JO.-HENRY. De vario coffeæ potum parandi modo. *Wittebergiæ*, 1788.
MIDDLETON, W. H. Manual of coffee planting. *Durban*, 1866.
MILHON. Dissertation sur le caffeyer. *Montpellier*, 1746.
MONNEREAU, ÉLIE. Le parfait indigotier; ou Description de l'indigo. . . . ensemble un traité sur la culture de café. *Amsterdam* and *Marseilles*, 1765. 238 pp.
MORREN, F. W. Die arbeiter auf einer Kaffeeplantage. 1900.
—Werkzaamheden op eene koffieonderneming. Handleiding voor opzichters bij de koffie-cultuur. *Amsterdam*, 1896. 266 pp.
NICOL, R. A treatise on coffee, its properties and the best mode of keeping and preparing it. 4th ed. *London*, 1832.
OWEN, T. C. First year's work on a coffee plantation. *Colombo*, 1877. 55 pp.
PIERROT, ÉDOUARD. Culture pratique et rationelle du caféier et préparation du grain pour la vente. *Paris*, 1906. 95 pp.
ROSSIGNEN, JULIO. Manual del cultivo del café, etc., in la America Española. *Paris*. 1859.
SIMMONDS, P. L. Coffee and chicory, their culture. chemical composition, preparation, etc. *London* 1864. 102 pp.
—Tropical agriculture. *London*, 1887. (pp. 27-79 deal with coffee.)
TYTLER, R. B. Prospects of coffee production. *Aberdeen*, 1878.
UGARTE, JOSÉ P. The cultivation and preparation of coffee for the market. *London*, 1916. 124 pp.
WILDEMAN, EM. DE. Les caféiers. *Bruxelles*, 1901.
—Les plantes tropicales de grande culture—café, cacao, coca, vanilla, etc. *Bruxelles*, 1902. 304 pp.
ZIMMERMANN, ALBRECHT. Over het enten van koffie volgens de methode van den Heer D. Butin Schaap. *Batavia*, 1904. 54 pp.

Periodicals

AUBRY-LE-COMTE. Culture et production du café dans les colonies. Revue Mar. et Col., Oct., 1865.
BEUGLESS, J. D. Coffee in its home. Overland Monthly, II:319.
CASWELL, G. W. Coffee in our new islands. Overland Monthly, n. s. XXXII:459.
COFFEE cultivation in the New World. Royal Botanic Gardens, *Kew*, Bull. of Misc. Information, 1893: 321-325.
CULTIVATION and preparation of coffee. Great Britain. Imperial Institute, Bulletin, 1915, XIII: 260-296.
DE VERE, M. S. Culture and use of coffee. Harper's Magazine, XLIV: 237.
FESCA, MAX. Uber Kaffeekultur. Jour. Landw. 1897, XLV: 13-41.
HAGEN, J. De Koffiecultuur. Onze Kol. Landbouw No. 7. 1914.
HAYWARD, C. B. Coffee and coffee culture. Scientific American, 1904, XCI: 189, 194-195.
LINNEAN SOCIETY. Proceedings, 1875-1880, contain articles on coffee culture.
LOEW, OSCAR. Fermation of cacao and of coffee. Porto Rico Agricultural Experiment Station. Report, 1907. pp. 41-55.
MARCANO, V. Essais d'agronomie tropicale. Ann. sci. agron. 1891, II: 119-152.
PEATFIELD, J. J. Culture of coffee. Overland Monthly, XIII: 323.
ROST, EUGEN C. Coffee growing. Scientific American Supplement, 1902, LIV:22189-22190.
TORRENS, J. H. Hydro-electric installation on a coffee plantation. General Electric Review, 1915. XVIII: 219-222.
—Electricity on a coffee finca. The Tea and Coffee Trade Journal, 1916, XXXI:418-421.

REGIONAL

ABYSSINIA

SOUTHARD, ADDISON E. The story of Abyssinia's coffees. Tea and Coffee Trade Journal, 1918, XXXIV: 212-215: 324-329.

AFRICA, NORTHERN

RIVIÈRE, CHARLES. Le caféier dans l'Afrique du nord. *Paris*, 1903.

ANGOLA

COFFEE cultivation in Angola. Royal Botanic Gardens, *Kew*, Bull. of Misc. Information, 1894: 161-163.

ARGENTINE

ARGENTINE REPUBLIC. Departamento nacional de tierras, colonias y agricultura. El café. (Coffea arábica) *Buenos Aires*, 1896. 22 pp.

AUSTRALIA

JACKSON, HENRY VAUGHAN. The cultivation of coffee. *Sydney*, 1908. 8 pp. Reprinted from Agricultural Gazette, June, 1908.

NEWPORT, H. Coffee cultivation in Queensland. Philippine Agricultural Review, 1910, III: 514–524. *Also*, Queensland Agricultural Journal, 1910, XXIV, pt. 6; XXV, pt. 1.

BRAZIL

BERTHOULE. La culture di caféier au Brésil, communication faite a la Société nationale d'acclimation de France. March 28, 1890.

BRAZIL and coffee. Souvenir of the Louisiana purchase exposition. 1904. 28 pp.

CAFFÈ, IL: la coltivazione, la produzione, le imitazione, le falsificazioni, il valore economico, il fisiologico, appendice. *Rio Janeiro*, 1910. 98 pp.

CRUWELL, G. A. and others. Brazil as a coffee-growing country. *Colombo*, 1878. 150 pp.

DA COSTA SANTOS, H. Consideracoes sobre o nosso café. *Rio Janeiro*, 1881. 19 pp.

DAFERT, F. W. De bemesting en het drogen van kaffie in Brazilia. *Amsterdam*, 1898. 250 pp.

—Über die gegenwärtige Lage des Kaffeebaus in Brazilien. *Amsterdam*, 1898. Also in English, 1900; French, Paris, 1900.

DAHNE, EUGENIO. The story of São Paulo coffee from plantation to cup. The Tea and Coffee Trade Journal, 1915, XXVIII:127.

DE OLIVEIRA, LUIZ TORQUATO, Marques. Novo methodo da plantação fecundidade, durabilidade estrumação e conservação do café e extincção das formigas, exposto em beneficio da agricultura do Brasil e lugares cafeeiros, offerecido aos agricultores. *Rio de Janeiro*, 1863. 30 pp.

EMPIRE of Brazil at the World's industrial and cotton centennial exposition of New Orleans, The. *New York*, 1885. 71 pp.

KOEBEL, ROTHERY and TWENEY, editors. Enciclopedia de la America del sur. Agriculture, Brazil, v. I; São Paulo, v. IV. *London* and *Buenos Aires*, 1913.

LALIÈRE, AMOUR. Le café dans l'état de Saint Paul (Brésil). *Paris*, 1909. 417 pp.

MISSON, LUIS, and TÉLLEZ O. Cultivo y beneficio del café en el Brazil: cómo se hacen en el estado de São Paulo. *Mexico*, 1907. 30 pp.

O FAZENDEIRO; revista mensal de agricultura, industria e commercio, dedicada, especialmente, aos interesses da lavoura cafeeiro. Anno 1, *São Paulo*, 1908.

PACHECO E SILVA, PERSIO. Do café no o éste de S. Paulo. *São Paulo*, 1910. 64 pp.

PECKHOLT, THEODORO. Monographia do café. In his, Historia das plantas alimentares e de gozo do Brazil. v. 5. 1871-84.

SÃO PAULO, *Brazil*. Secretaria da agricultura, commercio e obras publicas. Il caffè. Brevi notizie per Eugenio Lefèvre. 1904. 68 pp.

SCHUURMAN, G. A. E. De koffiecultuur in Brazilië. *Amsterdam*, 1901. 67 pp.

SMITH, H. H. Brazil: Amazona and the coast. (Special chapters on coffee) *London*, 1880.

—Culture of coffee in Brazil. Scribner's Magazine, XIX: 225. Penny Magazine, IX: 484.

STORY of São Paulo coffee from plantation to cup. Pan American Union. Bulletin, 1915, XLI; 370–378.

TEIXEIRA, C. O café do Brazil. *Rio de Janeiro*, 1883. 24 pp.

WARD, R. D. Visit to the Brazilian coffee country. National Geographic Magazine, 1911, XXII: 908–931.

CENTRAL AMERICA

CATER, R. W. Coffee in Central America. Chambers' Journal, LXXVI:570.

CHOUSSY, FELIX. Cultivo racional del café en centro América. *San Salvador*, 1917. 92 pp.

FOX, ALVIN. Coffee growing in Central America. Simmons' Spice Mill, 1918, XLI: 420-421.

CEYLON

ABBAY, R. Culture of coffee in Ceylon. Households Words, III: 109. *Also*, Nature, XIV: 375.

CRUWELL, G. A. Liberian coffee in Ceylon. *Colombo*, 1878.

HULL, E. C. P. Coffee planting in southern India and Ceylon. *London*, 1877. 324 pp.

KEEN, W. Coffee cultivation in Ceylon. *London*, 1871.

LEWIS, G. C. Coffee planting in Ceylon. *Colombo*, 1855.

SABONADIÈRE, WILLIAM. The coffee-planter of Ceylon. *London*, 1870. 216 pp.

—O fazendeiro de café em Ceylão. *Rio de Janerio*, 1875, 196 pp.

VAN SPALL, P. W. A. Verslag over de koffij en kaneelkultuur op het eiland Ceijlon. *Batavia*, 1863.

COLOMBIA

SAENZ, NICOLAS. Memoria sobre el cultivo del cafeto. *Bogota*, 1892. 65 pp. Also in French, *Bruxelles*, 1894. 121 pp.

COSTA RICA

CALVO, J. B. Coffee, its origin and propagation, its introduction and cultivation in Costa Rica. American Republics Bureau. Monthly Bulletin. 1904, XVIII: 1-6; 111–115.

—Report on coffee with special reference to the Costa Rican product. Bureau of American Republics. Publications. *Washington*, 1901, 15 pp.

COSTA RICA. Government. Estudio é informe sobre el café de Costa Rica. *San José*, 1900. 48 pp.

FIELD, WALTER J. Coffee culture and preparation in Costa Rica. The Tea and Coffee Trade Journal, 1908, XV;13.

SCHROEDER, JOHN. Coffee culture in Costa Rica. *San José*, 1890. 4 pp.

CUBA

BORRERO Y ECHEVERRÍA, ESTÉBAN. El café. Apuntes para una monografia. *Habana*, 1890. 16 pp.

COFFEE grounds of Cuba. All-the-Year, XXIV:61.

FERNÁNDEZ Y JIMÉNEZ, JOSÉ MARÍA. Agricultura cubana. 3 ed. *Habana*, 1868. 69 pp.

FOX, ALVIN. Coffee culture in Cuba and Porto Rico. Simmons' Spice Mill, 1918, XLI:1356-1359.

HILLMAN, JOSEPH. Coffee planting. *New York*, 1902. 16 pp.

OLD Cuban coffee plantations. Harper's Weekly, 1908, LII: 31.

EAST INDIES

ARNTZENIUS, G. Cultuur en volk. Beschouwingen over de gouvernementskoffiecultuur op Java. *'s Gravenhage*, 1891. 158 pp.

CAMPBELL, DONALD MACLAINE. The industries of Java: Coffee. In his, Java: past and present. *London*, 1915. pp. 931-944.

CHALOT, C. and THILLARD, R. Le café à Java. 1914.

COFFEE enterprise in the East Indies. Royal Botanic Gardens, *Kew*, Bull. of Misc. Information, 1893:123-124.

CRAMER, P. J. S. Gegevens over de variabiliteit van de in Nederlandsch-Indië verbouwde koffiesoorten. *Batavia*, 1913. 696 pp.

DUMONT, A. Consideraciones sobre el cultivo del café en esta isla. *Havana*, 1823.

KOFFIECULTUUR. Tijdsch. voor Nederlandsch-Indië, 1901, ser. 2, V: 168-175.

NEDERLANDSCH-INDISCHE maatschappij van nijverheid en landbouw. Handleiding voor de gouvernements-koffiekultuur. *Batavia*, 1873. 56 pp.

PARKHURST, E. T. Y. Coffees of the Dutch East Indies. The Tea and Coffee Trade Journal, 1918, XXXV: 316-322; 416-420; 1919, XXXVI: 22-27; 118-122.

RAEDT VAN OLDENBARNEVELT, A. C. De koffie-cultuur op Java. *'s Gravenhage*, 1898. 48 pp.

SMID, J. H. Handbook voor de kultuur der koffie in Oost en West Indie. *Middleburg*, 1884. 112 pp.

VAN ERMEL, W. K. L. K. Some facts about coffee in Palembang. *Singapore*, 1879. 16 pp.

VAN GORKOM, K. W. Groote cultuur in Nederlandsch Oostindie koffie. *Haarlem*. 1882.

FEDERATED MALAY STATES

GALLAGHER, WILLIAM JOHN. Coffee robusta. *Kuala Lumpur, Federated Malay States*, 1910. 7 pp.

LIBERIAN coffee at the Straits Settlements (C. Liberica bull.) Royal Botanic Gardens, *Kew*, Bull. of Misc. Information, 1888: 261-263; 1890:107-108, 245-253.

LIBERIAN coffee in the Malay native states. Royal Botanic Gardens, *Kew*, Bull. of Misc. Information, 1892:277-282.

FRENCH INDO-CHINA

BRIGGS, LAWRENCE P. The coffee of French Indo-China. Tea and Coffee Trade Journal, 1917, XXXIII: 118-123.

CRAMER, P. J. S. Coffee plantations of Tonkin, Philippine Agricultural Review, 1910, III; 94-100.

PARIS. Président du syndicat des productions et explorateurs de Tourane. Le café d'Annam; étude pratique sur sa culture. *Tourane, Annam*, 1895. 95 pp.

GOLD COAST

COFFEE cultivation at the Gold Coast. Royal Botanic Gardens, *Kew*, Bull. of Misc. Information, 1895: 21-23; 1897: 325-328.

GUADELOUPE

COFFEE in Guadeloupe. The Tea and Coffee Trade Journal, 1912, XXIII:445.

GUATEMALA

DIESELDORFF, E. P. Der Kaffeebaum. Praktische Erfahrungen über seine Behandlung im nördlichen Guatemala. *Berlin*, 1908. 36 pp.

MORREN, F. W. Koffiecultuur in Guatemale, met aanteekeningen betreffende de overige cultures de mijnen en den economischen toestand van deze republiek. *Amsterdam*, 1899. 142 pp.

PARKHURST, E. T. Y. Coffee in Guatemala. Californian Magazine, II:742.

GUIANA

AUBLET, FUSÉE. Histoire des plantes de la Guyane française. Observations sur la culture du café. *Paris*, 1775.

GUIANA (British) Permanent exhibitions committee. Cacao and coffee industries. Leaflet 6. 1911. 12 pp.

HAWAII

GREAT BRITAIN. FOREIGN OFFICE. Report on coffee culture in the Hawaiian Islands. *London*, 1897. 18 pp. (Diplomatic and Consular Reports. Miscellaneous Series, no. 425.)

HAWAII. BOARD OF COMMISSIONERS OF AGRICULTURE AND FORESTRY. Culture of coffee. Hawaiian Forester and Agriculturist, 1911, VIII, no. 10.

—Blight-resistant coffees. Hawaiian Forester and Agriculturist, 1912, IX, no. 8.

HAYWOOD, WM. Coffee culture in the Hawaiian Islands. *Washington*, 1898. 164 pp.

MCCHESNEY, J. M. The great coffee corner. Hawaiian Forester and Agriculturist, 1911, VIII: 206-211.

MCCLELLAND, J. L. Coffee culture in Hawaii. Overland Monthly, 1903, n.s. XLI: 170-178.

UNITED STATES DEPARTMENT OF AGRICULTURE. Division of Vegetable Physiology and Pathology. Circular No. 16. Danger of introducing a Central American coffee in Hawaii. *Washington*, 1898.

WHITNEY, HENRY MARTYN. The Hawaiian coffee planter's manual. *Honolulu*, 1894. 48 pp.

HAITI AND DOMINICAN REPUBLIC

INGINAC, G. B. Industrie agricole. Culture du caféier et préparation de la fève pour être livrée au commerce. *Port-au-Prince*, 1840. 22 pp.

LABORIE, P. J. The coffee planter of Saint Domingo. *Colombo*, 1845. 204 pp.

—An abridgment of the coffee planter of Saint Domingo. *Madras*, 1863. 83 pp.

PRESTOE, H. Report on coffee cultivation in Dominica. *Trinidad*, 1875.

HONDURAS, BRITISH

COFFEE cultivation in British Honduras. Royal Botanic Gardens, *Kew*, Bull. of Misc. Information, 1892:253-259.

INDIA

ANSTEAD, R. D. Coffee, its cultivation and manuring in South India. *Bangalore*, 1915. 3 pp.

ANDERSON, G. Coffee culture in Mysore. *Bangalore*, 1879.

ARNOLD, E. L. On the Indian hills, or coffee planting in Southern India. *London*, 1895. 350 pp.

CULTIVATION of coffee in India. Scientific American Supplement, 1900, L: 20620.

CULTURE of coffee in South Travancore. Fraser's Magazine, XC: 64.

ELLIOTT, R. H. Planter in Mysore. *London*, 1871.

ELLIOT, ROBERT H. Gold, sport, and coffee planting in Mysore. *Westminster*, 1894. 480 pp.

EXPERIENCES of a coffee planter in Southern India. Frasers' Magazine, XVIX:708.

COFFEE planting in Southern India. Spectator, LV:664.

HYBRID coffee in Mysore. Royal Botanic Gardens, *Kew*, Bull. of Misc. Information, 1898:30 and 207.

INDIA. STATISTICAL DEPARTMENT. The coffee crop in Coorg. *Simla*, 1885.

—The cultivation of coffee in India. *Simla*, 1898, 6 pp.

SHORTT, JOHN. A hand-book to coffee planting in southern India. *Madras*, 1864. 182 pp.

WATSON, J. D. Liberian coffee cultivation in Tavoy. *Tavoy, Burma*, 1893. 5 pp.

JAVA (*see* EAST INDIES)

KAFFA

BIEBER, FREDERICH J. Die Kaffee- und Baumwolle-Kultur in Kaffa. Zeitschrift für Kolonialpolitik, Kolonialrecht und Kolonial-wirtschaft, 1908, X: 774–781.

KONGO FREE STATE

MANUEL pratique de la culture du caféier et du cacaoyer au Congo Belge. Ministère des colonies, *Bruxelles*, 1908. 96 pp.

LAGOS

COFFEE planting in Lagos. Royal Botanic Gardens, *Kew*, Bull. of Misc. Information, 1896: 77-79.

LIBERIA

BOUTILLY, V. Le caféier de Libéria, sa culture et sa manipulation. *Paris*, 1900. 137 pp.

FELLE, W. Veeljarige waarnemingen en ondervindingen van een Liberia-koffieplanter. 1894.

MORREN, F. W. Cultuur bereiding en handel van Liberia koffie. *Amsterdam*, 1894. 86 pp.

MORRIS, Sir DANIEL. Notes on Liberian coffee, its history and cultivation. *Jamaica*, 1881. 14 pp.

MADAGASCAR

BUIS, J. L'Hémileia et l'avenir du caféier à Madagascar, et à la Réunion. 1907.

RIGAUD, A. Traité pratique de la culture du café dans la région centrale de Madagascar. *Paris*, 1896. 102 pp.

MEXICO

COOK, J. D. American coffee culture in Mexico. World Today, 1907, XII: 413–418.

FOX, ALVIN. Coffee culture in southern Mexico. Simmons' Spice Mill, 1918, XLI:1080-1081.

GÓMEZ, GABRIEL. Cultivo y beneficio del café. *Mexico*, 1894. 136 pp. Also in English.

LUDEWIG, H. JAUN. Veinte años trabajos de colonización y el cultivo del cafeto en Soconusco. *Mexico*, 1909. 53 pp.

MONCÀDA, M. Notas sobre el cultivo y beneficio del café. Memorias y revista de la Sociedad cientffica "Antonio Alzate," 1905-6, XXIII: 281–287.

ROMERO, MATÍAS. Cultivo del café en la costa meridional de Chiapas. 3 ed. *Mexico*, 1875. 240 pp.

—El cultivo del café en la república mexicana. 2 ed. *Mexico*, 1893. 127 pp. Also in English, *New York*, 1901. 74 pp.

—El estado de Oaxaca. *Barcelona*, 1886. 212 pp.

TERRY, E. G. C. Near view of coffee in Mexico. Pan American Union. Bulletin. 1914, XXXIX: 903–906.

TERRY, L. M. Coffee culture in Mexico. Overland Monthly, 1901, n. s. XXXVII: 702–709.

TORRES, J. T. Ensayo experimental sobre el café. *Mexico*, 1876.

YORBA, J. Mexican coffee culture. 2 ed. *Mexico*, 1895. 64 pp.

NATAL

NATAL. Commission appointed to inquire into and report upon matters relating to coffee cultivation in the colony. Report. *Maritzburg*, 1881. 6 pp.

STAINBANK, H. E. Coffee in Natal; its culture and preparation. *London*, 1874. 78 pp.

NICARAGUA

SHEDD, W. J. The story of Matagalpa coffee. Tea and Coffee Trade Journal, 1918, XXXIV: 118–122.

PARAGUAY

COFFEE growing in Paraguay. Scientific American Supplement, 1914, LXXVIII: 340.

PORTO RICO

LINCK, J. H. Arbor caffe Lipsiae florens. Extrait factice des Ephem. Acad. naturae curiosorum. 1725. 7 pp.

MCCLELLAND, THOMAS B. Suggestions on coffee planting for Porto Rico. Porto Rico Agricultural Experiment Station. Circular, no. 15. Also in Spanish.

MCCLELLAND, T. B. Restoring Porto Rico coffee. The Tea and Coffee Trade Journal, 1918, XXXV:420-421.

NATIONAL COFFEE GROWERS' ASSOCIATION. Some facts about Porto Rico coffee. 1913.

VAN LEENHOFF, JOHANNES W. Coffee planting in Porto Rico. *Mayaguez*, 1904. 14 pp.

PORTUGUESE COLONIES

SOCIEDADE DE GEOGRAPHIADE LISBOA. Exposição colonial de algodão, borracha, cacau e café. 1906. 104 pp.

SIERRA LEONE

HIGHLAND coffee of Sierra Leone (Coffea stenophylla, C. Don). Royal Botanic Gardens, *Kew*, Bull. of Misc. Information, 1896: 189-191.

SOUTH AMERICA

FOX, ALVIN. Liberian coffee in South America. Simmons' Spice Mill, 1918, XLI:549-550.

TRINIDAD

TRINIDAD coffee. Royal Botanic Gardens, *Kew*, Bull. of Misc. Information, 1888:129-133.

UGANDA

BROWN, E. and HUNTER, H. H. Planting in Uganda; coffee, Para rubber, cocoa. *London*, 1913. 176 pp.

COFFEE and tea from Uganda. Imperial Institute. Bulletin. *London*, 1918, XVI.

SMALL, W. Coffee cultivation in Uganda. Imperial Institute. Bulletin. 1914, XII: 242–250.

UNITED STATES

JONES, A. C. Thea viridis, or Chinese tea plant, and the practicability of its culture and manufacture in the United States. Also some remarks on the cultivation of the coffee plant. *Washington*, 1877. 26 pp.

KAINS, M. G. Chicory growing as an addition to the resources of the American farmer. U. S. Depart. of Agriculture. Div. of Botany. Bulletin, no. 19. *Washington*, 1898.

VENEZUELA

ERNST, A. El café de Liberia én Vénézuela. *Caracas*, 1878.

HUNTINGTON, L. M. The story of Táchira coffee. Tea and Coffee Trade Journal, 1917, XXXIII: 318–325.

JUNTA de aclimatacion cuestionario sobre el cultivo del café. *Caracas*, 1895. 42 pp.

PELACIOS, G. DELGADO. Contribución al estudio del café en Venezuela. *Caracas*, 1895. 93 pp.

WEST INDIES

LOWNDES, JOHN. The coffee-planter; or, An essay on the cultivation and manufacturing of that article of West-India produce. *London*, 1807. 76 pp.

NICHOLLS, H. A. A. Liberian coffee in the West Indies. *London*, 1881. 31 pp.

SOILS

CLARKE, T. On the management of soils under coffee in Madras. Madras Agricultural Exhibit. Report. 1883.

FAUCHERE, A. Du choix du terrain dans la culture du caféier. Colonie de Madagascar and Dependances. Bulletin economique, 1907, VII: 349–358.

HUGHES, J. Ceylon coffee soils and manures. *London*, 1879.

KENNY, J. Tea, coffee, tobacco (manuring, etc.) 1910.

KRAMERS, J. G. Verslag omtrent grondanalyses van koffietuinen. *Batavia*, 1902. 86 pp.

DISEASES AND ENEMIES

AULMANN, G. and LA BAUME, M. Die Faune der deutcher Kolonien. Pt. 2. Die Schädlinge des Kaffees. *Berlin*, 1911.

BURCK, W. Over de oorzaken van den achteruitgang von de gouvernementskoffiecultuur op Java. 1896.

—Over de koffiebladziekte en de middelen om haar te bestrijden. *Batavia*, 1887:61.

BIDIE, G. Report on the ravages of the bore in coffee estates. *Madras*, 1869. 93 pp.

BOSSE. J. VON. Eenige beschouwingen omtrent de oorzaken van den achterintgang von de koffiecultuur der Sumatra's Westkust, etc. *'s Gravenhage*, 1895.

CAMERON, JOHN. Prevention of leaf disease in coffee; report of a visit to Coorg. 1899. 23 pp.

COOKE, M. C. Two coffee diseases. Popular Science Review, XV:161.

DELACROIX, GEORGES. Les maladies et les ennemis des caféiers. *Paris*, 1900. 212 pp.

ERNST, ADOLF. Estudios sobre las deformaciones, enfermedades y enemigos del arbol de café en Venezuela. *Caracas*, 1878. 21 pp.

GOELDI, EMIL AUGUST. Memoria sobre una enfermedad del cafeto en la provincia Rio de Janeiro, Brasil. *Mexico*. 1894. 118 pp.

GREEN, E. E. Observations on the green scale bug in connection with the cultivation of coffee. *Colombo*, 1886. 4 pp.

HARMAN, F. E. Report on coffee leaf miner disease. Mysore Government. *Bangalore*, 1880. 41 pp.

INDIA. MYSORE. DEPARTMENT OF AGRICULTURE. Short report of a tour made in Coorg during February and March, 1914. (Green bug on coffee.) 1914. 3 pp.

KONINGSBERGER, J. C. De dierlijke vijanden der koffiecultuur op Java. *Batavia*, 1897-1901. 2 pts.

KUYPER, J. Een fusicladium-ziekte op hevea. De zilver-draad-ziekte der koffie in Suriname. De gevolgen van keukenzout-houdend water voor begieting en bespuiting. 1913.

LEMARIÉ, CHARLES. Une maladie du caféier. *Hanoi*. 1899. 6 pp.

MASSEE, G. E. Coffee diseases of the New World, Royal Botanic Gardens, *Kew*, Bull. of Misc. Information, 1909:337-341.

MEXICO. MINISTERIO DE FOMENTO, COLONIZACIÓN É INDUSTRIA. La fumagina y el pulgón de los cafetos en la República Mexicana. 1897. 11 pp.

MISSON, LUIS, and TÉLLEZ, O. Cultivo y beneficio del café en el Brasil: cómo se hacen en el estado de São Paulo, por Luis Misson; y Plagas del cafeto en México, por O. Téllez. *Mexico*, 1907. 30 pp. (Mexico, 1867-republic. Comisión de Parasitologia Agrícola. Circular 70.)

NEITNER, J. The coffee tree and its enemies in Ceylon. *Colombo*, 1880. 32 pp.

PEELEN, H. J. E. Eenige opmerkingen omtrent de koffie bladziekte. 1888.

PRINS, H. J. De oeret-plaag in de koffietuinen op Java. 1884.

SADEBECK, R. Beobachtungen und Bemerkungen über die durch Hemileia vastatrix verursachte Blattfleckenkrankheiten der Kaffeebäume. *Munchen*, 1895. 9 pp.

SMITH, JARED G. Two plant diseases in Hawaii. *Honolulu*, 1904. 6 pp.

THIERRY, A. J. Notes sur le greffage du caféier. du cacaoyer et du muscadier et la maladie vermiculaire du caféier. 1899. 77 pp. Reprinted from Bulletin agricole de la Martinique.

TINS, H. J. De veret-plaag in de koffietuinen op Java. *Enschede*, 1885. 86 pp.

TONDUZ, ADOLFO. Informe sobre la enfermedad del cafeto. *San José* (Costa Rica), 1893. 28 pp.

VAN ROMUNDE, R. Koffiebladziekte en koffie kultuur. *'s Gravenhage*, 1892. 92 pp.

ZACHER, FRIEDRICH. Die wichtigsten Krankheiten und Schädlinge der tropischen Kulturpflanzen und ihre Bekämpfung. *Hamburg*, 1914.

ZIMMERMANN, ALBRECHT. De nematoden der koffiewortels. *Batavia*, 1898-1900. 2v.

Periodicals

BOTANICAL MAGAZINE, *London*, 1787-1904. Coffee arabica, XXXII, tab. 1303; CXXII, tab. 7475: coffee benghalensis, LXXXII, tab. 4917; coffee stenophylla, CXXII, tab. 7475; coffee travacarensis, coffee triflora, CX, tab. 6749.

COOK, MELVILLE THURSTON. The coffee leaf miner. U. S. Dept. of Agriculture. Bureau of Entomology. Bulletin, 1905, n. s. LII: 97-99.

COOK, M. T. and HORNE, W. T. Coffee leaf miner and other coffee pests. *Santiago*. 1905. 21 pp. (Cuba, 1902-republic. Estación central agronómica. Boletin 3. English and Spanish ed.)

FABER, F. C. VON. Die Krankheiten und Schädlinge des Kaffees. Centralblatt für Bakteriologie, Abteilung 2. 1908, XXI: 97–117.

FAWCETT, GEORGE L. Fungus diseases of coffee in Porto Rico. Porto Rico Agricultural Experiment Station. Bulletin 17.

GIARD, A. Sur deux cochenilles nouvelles Ortheziola fodiens nov. spec. et Rhizoecus Eloti nov. spec., parasites des racines du caféier a la Guadeloupe. Comptes rendus de la Société de Biologie. 1897.

GÖLDI, E. A. Relatorio sobre a molestia do caféeiro na provincia do Rio de Janeiro. Archivos do Museu Nacional do Rio de Janeiro, 1892, VIII: 7–121.

MANN, B. P. Coffee leaf miner. American Naturalist, VI:332-596.

MARCHAL, PAUL. Sur un nouvel ennemi du caféier; le "Xyleborus coffeae." Journal d'Agriculture tropicale, 1909, IX: 227–228.

MORRIS, D. Coffee-leaf disease of Ceylon. Nature, XX: 557.

MORSTATT, HERMANN ALBERT. Die Schädlinge und Krankheiten des Kaffeebaumes in Ostafrika. Zeitschrift für Land- und Forstwirtschaft in Deutsch-Ostafrika. 1912, VIII, Juli.

TEA and coffee diseases. Royal gardens, *Kew*. Bulletin, 1899, CLI-CLII: 89–133.

TUCKER, ELBERT STEPHEN. Some miscellaneous results of the work of the Bureau of Entomology—IX. New breeding records of the coffee-bean weevil. U. S. Dept. of Agriculture. Bureau of Entomology. Bulletin, 1909, LXIV: 61–64.

VAN DER WEELE, H. W. Ein neuer javanischer kaffeeschälding. Xyleborus coffeivorus nov. spec. East Indies, Dutch. Department van Landbouw. Bulletin, 1910, XXXV. Zoologie 5. pp. 1–6.

ZIMMERMANN, ALBRECHT. De kanker (Rostellaziekte) van Coffea arabica. Buitenzorg, Java. Jardin botanique. Mededeelingen uit 's Lands plantentuin, 1900, XXXVII: 24–62.

GENERAL WORKS

DESCRIPTIVE, HISTORICAL, ETC.

ABBAL, L. Étude sur le café. *Montpellier*, 1885.

ABENDROTH, G. F. De coffea. *Lipsiæ*, 1825.

ALCOTT, WILLIAM ALEXANDER. Tea and coffee. *Boston*, 1839. 174 pp.

ALVES DE LIMA, J. C. Some revelations about the cultivation, the commerce and the use of coffee. *Syracuse, N. Y.*, 1901, 16 pp.

BLOUNT (BLUNT), SIR HENRY. An epistle in praise of tobacco and coffee, prefixed to a little treatise entitled Organum Salutis. *London*, 1657

BONTEKOS, C. Tractaat van het excellente kruyd thee. I. Van de coffi. *'s Gravenhage*, 1679.

BRILL., MARBUGER. Dissertation sur le café. 1862.

BUC'HOZ, P. J. Dissertation sur le café. *Paris*, 1787.

CHEVALLIER, ALPHONSE. Du café, son historique, son usage, son utilité, ses altérations, ses succédanés et ses falsifications, etc. *Paris*, 1862. 63 pp.

CORNAILLAC, G. El café, la vainilla, el cacao y el té, cultivo, preparación, exportación, clasificación comercial, gastos, rendimiento. *Barcelona*, 1903. 480 pp.

COUBARD D'AULNAY, G. E. Monographie du café, ou manuel de l'amateur du café, ouvrage contenant la description et la culture du caféier, l'histoire du café, ses caractères commerciaux, sa préparation et ses propriétés. *Paris*, 1832.

CRIPET, DR. Histoire et physiologie du café. *Paris*, 1846.

DELRUE-SCHREVENS, L. Le café: étude historique et commerciale. *Tournai*, 1886. 90 pp.

DE VAUX, ANTOINE ALEXIS FRANÇOIS, CADET. Dissertation sur le café; son historique, ses propriétés, et le procédé pour en obtenir la boisson la plus agréable, etc. *Paris*, 1807. 119 pp.

DOUGLAS, JAMES. Arbor yemensis fructum cofè ferens: or, A description and history of the coffee tree. *London*, 1727. 60 pp.

DUCHARTRE, P. Plantes alimentaires. De l'usage du café, du thé, et du chocolat. *Paris*, 1865.

DUFOUR, PHILIPPE S. Traitez nouveaux et curieux du café, du thé, et du chocolat. *Lyons*, 1671, 1684; *La Haye*, 1693.

DUMAS, LEON. Le pays du café. 1885.

EGGERTH, J. De coffea. *Budæ*, 1833.

ELLIS, JOHN. An historical account of coffee. *London*, 1774. 71 pp.

ÉTRENNES à tous les amateurs de café; contenant l'histoire, la description, la culture, les propriétés de ce végétal. *Paris*, 1790. 2 pts. in 1 v.

FRANKLIN, ALFRED. La vie privée d'autrefois. *Paris*, 1893.

FAUCHON, L. J. Sur le café, *Paris*, 1815.

GALLAND, A. De l'origine et du progrez du café. Sur un manuscrit arabe de la Bibliothèque du Roy. *Paris*, 1699.

GALLAND, ANTOINE. A treatise upon the origin of coffee. *London*, 1695.

GENTIL, M. Dissertation sur le caffé. 1787. 180 pp.

GEORGIUS, J. C. S. De coffee. *Tubingæ*, 1752.

GIRARD, A. L. Les sucres, le café, le thé, le chocolat. *Paris*, 1907. 96 pp.

GMELIN, JOHN GEORGE. Dissertation de coffee. *Tubingæ*, 1752.

GRAY, ARTHUR, comp. Over the black coffee. *New York*, 1902. 108 pp.

GUBIAN, J. M. A. Sur le café. *Paris*, 1814.

GUILLOT, A. Le café. *Toulon*, 1883.

HEWITT, ROBERT, JR. Coffee: its history, cultivation, and uses. *New York*, 1872. 102 pp.

HOUGHTON, JOHN. Account of coffee. 1699.

HULL, E. C. P. Coffee, its physiology, history and cultivation. *Madras*, 1865.

JAMES, ROBERT. Treatise on tobacco, tea, coffee and chocolate. *London*, 1745.

JARDIN, EDÉLESTAN.* Le caféier et le café, monographie historique, scientifique et commerciale de cette rubiacée. *Paris*, 1895. 413 pp.

JOMAND, J. Du café. *Paris*, 1860.

KEABLE, B. B. Coffee from grower to consumer. *London*, 1910. 120 pp.

KOEBEL, ROTHERY AND TWENEY, editors. Enciclopedia de la America del Sur. Coffee in South America, v. II: 14. *London* and *Buenos Aires*. 1913.

KRAMERS, J. G. Waarnemingen en beschouwingen naar aanleiding van eene reis in de koffie. *Batavia*, 1898. 101 pp.

KRUGER, JOHN G. Gedanken, vom Kaffee, Thee und Taback. 1743.

LABAT, LE P. Traité de la culture du café, dans un nouveau voyage aux iles de l'Amérique. *Paris*, 1722.

LALOU. Du café: son origine, le temps de sa découverte et celui ou l'on commence à en faire usage. *Rouen*, 1843.

LAW, W. The history of coffee, including a chapter on chicory. *London*, 1850.

LE PLE, A. Le café: histoire, science, hygiène. *Rouen*, 1877. 38 pp.

LOCK, CHARLES GEORGE WARNFORD. Coffee: its culture and commerce in all countries. *London*, 1888. 264 pp.

LODGE, J. L. Coffee. *Birmingham*, 1894. 14 pp.

MAATSCHAPPIJ tot nut van't algemeen. Bijdragen tot de kennis van de voornaamste voortbrengselen van Nederlandsch Indie. *Amsterdam*, 1860–61. 2v. II. De koffij.

MACÉ, C. Du café. *Paris*, 1853.

MARCUS, C. J. De coffea. *Leipzig*, 1837.

MARTÍNEZ, EMILIANO. Memoria sobre el café; su cultivo, beneficio, maquinas en uso, escojida, exijencias de los mercados, y otros conocimientos utiles. 2 ed. *Nueva Orleans*, 1887. 61 pp.

MEYNER. Traité sur le café. 1624.

MIEDAN, C. Du café. *Paris*, 1862.

MOREIRA, N. J. Breve consideraçoes sobre historia e cultura do caféeiro e consume de seus productes. *Rio de Janeiro*. 1873.

NAIRON, ANTOINE FAUSTUS. De saluberrima potione cahue, seu cafe nuncupata discursus. *Romae*, 1671.

*Not Édelestan as elsewhere in the volume.

—A discourse on coffee; its description and vertues. (Tr. from Latin by C. B.) *London*, 1710.

NATUR gemæssige Beschreibung der Coffee, etc. *Hamburg*, 1684.

NIEBUHR, KARSTENS. Description de l'Arabie. *Amsterdam*, 1774.

—Travels through Arabia performed. *London*, 1792.

NEUBERT, J. Der Kaffee. *Würzburg*, 1838.

NOVI tractatus de potu caphé; de chinensium thé; et de chocolata. *Genevæ*, 1699.

OLDMIXON, JOHN. Het Britannische ryk in Amerika, zynde eene beschryving van de ontdekking, bevolking, inwoonders, het klimaat, den koophandel, en tegenwoordigen staat van alle de Britannische coloniën, in dat gedeelte der wereldt. Uit het Engelsch, als mede een omstandig Berecht aangaande de koffy en koffy-plantery uit het Fransch vertaald. *Amsterdam*, 1721. 2v.

PAN AMERICAN UNION. Coffee. *Washington*, D. C. 1901.

PARSLL, S. A treatise on tobacco, tea, coffee and chocolate: . . . (tr. by Dr. James) *London*, 1746.

PENILLEAU, AUGUSTE. Étude sur le café, au point de vue historique, physiologique, hygiénique et alimentaire. *Paris*, 1864. 90 pp.

PENNETIER, G. Le café. *Paris*, 1878.

PETERS, F. De potu caffi. *Giessæ Hassorum*, 1666.

PRINGLE, W. Science and coffee. *Madras*, 1897. 66 pp.

QUÉLUS, DE. Histoire naturelle du cacao, et du café, etc. *Amsterdam*, 1720.

RAMSEY (RUMSEY), WALTER. Organum salutis; or experiments on the virtue of coffee and tobacco. *London*, 1657.

RAOUL, ÉDOUARD FRANÇOIS ARMAND. Culture du caféier, semis, plantations, taille, cueillette, de pulpation, décorticage, expédition, commerce, espèces et races. 2 ed. *Paris*, 1897. 251 pp.

REICHENBACH, ANTON BENEDICT. Der Kaffeebaum, seine Verbreitung, Kulturgeschichte und natürliche Beschaffenheit, der Kaffeehandel und die Consumtion des Kaffee's, seine medicinische Anwemdung, die Kaffeesurrogate und der Anbau der gangbarsten Sorten. *Berlin*, 1867. 92 pp.

RENDLE, A. B. and W. G. FREEMAN. Encyclopædia Britannica. 11th ed. v.6: 646.

ROBIN, L. Memoire sur le café, sur sa culture, son commerce, ses propriétés physiologiques, thérapeutiques et alimentaires. *Abbeville*, 1864.

ROQUES, JOSEPH. Traité historique de l'origine et de progres du café, tant dans l'Europe, de son introduction en France et de l'établissement de son usage à Paris. *Paris*, 1715.

RUMFORD, Count (BENJAMIN THOMPSON). Of the excellent qualities of coffee, and the art of making it in the highest perfection. Essay XVIII. pp. 155-207.

SPLITZERBER. Drey Tractate von Café, Thé und Chocolate. *Budissin*, 1688.

SPON, J. De l'usage du caphé, du thé, et du chocolat. *Paris*, 1671.

TARR, A. De coffea. *Pestini*, 1836. Hungarian text.

THOMPSON, BENJAMIN. (See RUMFORD, Count.)

THOMPSON, WILLIAM GILMAN. Coffee. Composition; method of preparation; physiological action; adulteration; substitutes. In his, Practical dietetics, 1909. pp. 252-257.

THURBER, FRANCIS BEATTY. Coffee: from plantation to cup. *New York*, 1881. 416 pp.

TOGNI, M. Raccolta delle singolari qualitá del caffè. *Venetia*, 1675.

VAN DEN BERG, NORBERT PIETER. Historical-statistical notes on the production and consumption of coffee. *Batavia*, 1880. 92 pp.

VILARDEBO, J. El tabaco y el café. *Barcelona*, 1888. 142 pp.

WALSH, JOSEPH M. Coffee: its history, classification and description. *Philadelphia*, 1894. 309 pp.

WELTER, H. Essai sur l'histoire du café. *Paris*, 1868.

Periodicals

AHLENIUS, KARL. Kaffe, te och rörsocker, deras ursprungliga hem och viktigaste produktionsområden. Ymer, 1903, XXIII:242-268.

BANNISTER, RICHARD. Sugar, coffee, tea and cocoa, their origin, preparation, and uses. Journal of the Society of Arts, XXXVIII: 1000-1014.

BRANSON, W. P. Coffee. Journal of the Society of Arts, 1874, XXII: 456-461.

COFFEE. Leisure Hour, 1882, XXXI: 45-48.

COFFEE King. Chambers' Journal, LXXXII:28.

COFFEE infusion. Medical Standard, 1913, XXXVI: 52-56.

DE JUSSIEU. Histoire du café. Histoire de l'Académie Royal des Sciences, 1713; Mémoires, 1716: 291.

DEWEY, STODDARD. How coffee came to Paris. English Illustrated Magazine, 1898, XX: 312-315.

FERRIS, W. M. Coffee. Nation, XXXIV: 192; Leisure Hour, XXXI: 45.

GUÉRIN, P. Le café. Revue Scientifique, 1908, ser. 5. X: 486-494.

HARRIS, WILLIAM B. Some coffees of today. Good Housekeeping, 1913, LVII: 264-268.

HERAUD, AUG. FRED. Le café. Science et Nature, Feb. 28, 1885, p. 209.

HISTORY and cultivation of coffee. Godey's Lady's Book, LIV: 51.

HOFFMAN, PAUL. Aus dem ersten Jahrhundert des Kaffees. Zeitschrift für Kulturgeschichte, 1901, VIII: 405-441, IX: 90-104.

JACKSON, J. R. Coffee. Nature, 11:126; Blackwells' Magazine, LXXV: 86; Household Words, V: 562; Penny Magazine, 1: 49.

LESSON, RENÉ-PRIMEVÈRE. Précis historique, botanique, médical et agronomique sur le café. Annual Mar. et Col., 1820: 842.

MARSHALL, W. B. Coffee, its history and commerce; an outline. American Journal of Pharmacy, 1902, LXXIV: 361-374.

OM Kaffe, dess historica och användning. Helsovännen, 1887, II: 157-163.

PICTORIAL History of coffee. The Tea and Coffee Trade Journal, 1918, XXXIV:26-28; 124-127; XXXV: 116-125; 526-584; 1919, XXXVI: 322-324; 515-516; XXXVII: 140-145.

TUCKERMANN, C. K. Coffee drinking in eastern Europe. North American Review, 1889, CXLVIII: 643-645.

UKERS, WILLIAM H. Better teas and coffees. Good Housekeeping, 1911, LIII: 495-498. Reprinted, Tea and Coffee Trade Journal, 1911, XXI:274-276.

—A talk on coffee. Good Housekeeping, 1908, XLVI: 532-536.

—Tea and coffee economies. Joe Chapple's News Letter, 1913, I: 9. Reprinted, Tea and Coffee Trade Journal, 1913, XXV: 476-477.

WORLD's drink. Review of Reviews, 1909, XXXIX: 109-110.

LITERATURE, POETRY, ROMANCE

ABD-EL-KADER, ANSARI DJEZERI HANBALI. Des preuves les plus fortes en faveur de la légitimité de l'usage du café, in chréstomathie arabe, par Sylvestre de Sacy. *Paris,* 1806.

BAROTTI, L. Il caffé (poem). Esprit des Journaux, 1681, 110–120.

BLONDEAU. Étrennes littéraires aux grands hommes ou l'empire du café, poême en 10 chants. *Paris,* date unknown.

—L'empire du café et le rapport de son influence sur l'esprit les mœurs et l'économie animale, poême en 4 chants. *Paris,* 1824.

BOUQUET blanc et le bouquet noir, Le, poisie en 4 chants. 60 pp.

BRADY. CYRUS TOWNSEND. A corner in coffee. *New York,* 1904.

CAFFEE die schonste Panacee, in einem Lobgedicht uber die wunder baie Heikraft des nectarischen Caffeetranks. 1775. 23 pp.

CHARACTER of a coffee house, with the symptoms of a town-wit. *London,* 1673; in Harleian Miscellany, VI:429.

CHARACTER of coffee and coffee houses. Hazlitt's Handbook to Popular Literature, 1661.

COFFEE and crumpets; a poem. Frasers' Magazine, XV:316.

COFFEE houses vindicated: in answer to the late published character of a coffee house. *London,* 1675; also in Harleian Miscellany, VI:433.

COFFEE scuffle; occasioned by a contest between a learned knight and a pitifull pedagogue, with the character of a coffee house. Printed and are to be sold at the Salmon coffee house, neer the stocks market, (London), 1662. Verses by Woolnoth or Sir J. Langham and Evans, a schoolmaster.

DE GOURCUFF, O. Le café, epitre attribué à Senecé. *Nantes,* 1883. 19 pp.

DE MERY, C. Le café, poeme: accompagné de documents historiques sur le café, sur son origine, sur son commerce et sur les peuples d'Orient qui font specialement usage du café. *Rennes,* 1837. 204 pp.

D'ISRAELI, ISAAC. Curiosities of literature. *London,* 1824. Contains article on, Introduction of tea, coffee and chocolate, in which the following items are mentioned: (1) An Arabic and English pamphlet on The nature of the drink, kouhi or coffee, pub. at *Oxford,* 1659; (2) A cup of coffee, or coffee in its colours, a satirical poem (quoted), 1663; (3) A broadside against coffee or the marriage of the Turk (quoted), 1672; (4) The women's petition against coffee, 1674.

DRUMONT, E. Les cafés et les restaurants d'autrefois. Magasin Littéraire, X:264.

EXCELLENT virtue of that sober drink coffee, The. Popular ballad of the 17th century. Broadsheet.

GEYER, E. E. An potus café dicti vestigia in Hebræos sacræ scripturæ codice reperiantur? Dissertation. *Wittenbergiæ,* 1740.

GOLDONI, CARLO. La bottega di caffè. *Venice,* 1750.

LAGUERRE, J. N. Essai sur le café. *Paris,* 1818.

LE PAGE, AUG. Les cafés politiques et littéraires de Paris. 1874.

MASSIEU, G. Carmen caffaeum. *Paris,* 1740.

MELAYE, S. Éloge du café. (A song.) *Paris,* 1852. 4 pp.

MILLER, JAMES. The coffee-house. A dramatick piece. *London,* 1737. 38 pp.

POEM in Latin, A, on coffee; is found in the Abbé Olivier's, Collection of modern Latin poets; and in, Étrennes à tous les amateurs du café, *Paris,* 1790, in which a French translation is printed facing the Latin text; *also* Il caffè, in Poemetti Italiana, vol. 3, 1797.

REBELLIOUS antidote: or a dialogue between coffee and tea: *verse,* 1685.

ROSSEAU, J. B. Le caffé, comédie. 1695. 56 pp.

SCHOTEL, G. D. J. Letterkundige bijdragen tot de geschiedenis van den tabak, de koffij en de thee. *'s Gravenhage,* 1848. 215 pp.

ST. SERFE, THOMAS. Taruga's wiles, or the coffee house; a comedy. *London,* 1668.

SMYTH, PHILIP. The coffee house; a characteristic poem. *London,* 1795.

STEELE, SIR RICHARD. On characters in coffee houses. Spectator, No. 49.

VOLTAIRE, F. M. A. DE. The coffee-house; or, Fair fugitive. A comedy. *London,* 1760.

WARD, EDWARD. The humours of a coffee house. *London,* 1714.

MANUFACTURING PROCESSES

BREWING

ABORN, EDWARD. Better coffee making. Tea and Coffee Trade Journal, 1912, Supplement to No. 6, XXIII: 49–52; 1913, XXV: 568–574; 1919, XXIX: 553–556.

—Better coffee for the army. The Tea and Coffee Trade Journal, 1918, XXXV: 622–624.

—On boiling coffee. The Tea and Coffee Trade Journal, 1919, XXXVI:48-49.

—Coffee-making developments. Tea and Coffee Trade Journal, 1914, XXVII: 550–556.

—On coffee grinding and brewing. Yesterday, today and tomorrow in better coffee making. Tea and Coffee Trade Journal, 1916, XXXI: 570–576.

BACON, RAYMOND F. Efficiency of coffee-making devices. Tea and Coffee Trade Journal, 1915, XXIX: 427–429.

BEST method of making coffee. Journal of Home Economics, 1914, VI: 480-481.

BONNETTE. Préparation du café en campagne, filtre "en rognon" adapté à une marmite de campement. Revue d'Hygiène, 1911, XXXIII: 459–462. *Also,* in Spanish, Revista de Sanidad militar, 1911, ser. 3, I: 427-429.

BOYES, E. How to obtain an ideal cup of coffee; its cost and value. *London,* 1898. 16 pp.

BROADBENT, HUMPHREY. The domestick coffee man, shewing the true way of preparing and making chocolate, coffee and tea. *London,* 1722.

COFFEE making questionnaire. The Tea and Coffee Trade Journal, 1917, XXXII:31-34.

DUFOUR, PHILIPPE SYLVESTRE. Translation by John Chamberlayne. The manner of making coffee, tea, and chocolate. As it is used in most parts of Europe, Asia, Africa and Spanish America. Newly done out of French and Spanish. *London,* 1685. 116 pp.

ELLIS, H. D. Notes on the earliest form of coffee-pot. Preceedings of the Society of Antiquaries of London, 1899, ser. 2, XVII: 390–394.

FOREST, L. L'art de faire le café du cuit a l'ancienne. *Paris.*

FRANKEL, E. M. Coffee making comparisons. Tea and Coffee Trade Journal, 1917, XXXII: 336–337.

FRANKEL, F. HULTON. Value of coffee brews. Tea and Coffee Trade Journal, 1917, XXXIII: 238.

GENTIL, A. A. P. Dissertation sur le café et sur les moyens propres à prevenir les effets qui resultant de sa préparation, communément vicieuse, et en rendre la boisson plus agreable et plus salubre. *Paris*, 1797.

GIRAUD, A. Cafés de Paris, procédés uniques pour la préparation du café, glorias, grogs à l'américaine. *Paris*, 1853. 75 pp.

HARRIS, WILLIAM B. Coffee making comparisons. Tea and Coffee Trade Journal, 1917, XXXII: 336–337.

How to make a cup of coffee. Godey's Lady's Book, LXIII: 107. *Also*, Sharpe's London Magazine, XLIV: 259.

MASSON, Abbé. Le café, ses propriétés, manière nouvelles de la préparer. *Epernay*, 1885. 24 pp.

MASSON, P. Le parfait limonadier, ou la manière de préparer le thé, le caffé, le chocolat. *Paris*, 1705.

MEITZKY, J. H. De vario coffeæ potum parandi modo. *Wittebergiæ*, 1782.

T., C. DE. Café français: recette economique. *Paris*, 1824.

WILHELM, R. C. "Drip" method the best. Tea and Coffee Trade Journal, 1916, XXXI: 338–339.

WILLCOX, O. W. About coffee-making methods. Tea and Coffee Trade Journal, 1918, XXV: 618–620.

WOODRUFF, SYBIL. Standard strength in coffee brews. Tea and Coffee Trade Journal, 1916, XXXI: 133–137.

WORLD'S largest coffee brewery. The Tea and Coffee Trade Journal, 1919, XXXVI:230-233.

GLAZING

DANNEMILLER, A. J. Coffee coating upheld. Tea and Coffee Trade Journal, 1914, XXVII: 556-557.

HARRIS, WILLIAM B. Green and roast coffees, the adulteration and misbranding thereof. American Grocer, Nov. 19, 1913: 19-20.

KRZIZAN, R. Ueber Eiweiss-Kaffeeglasur. Zeitschrift für Nahrungs- und Genussmittel, 1906, XII: 213–216.

SCHAER, E. Notizen über die Firnisierung von Kaffeebohnen. Zeitschrift für Untersuchung der Nahrungs- und Genussmittel, 1906, XII: 60.

WILLCOX, O. W. Concerning glazed coffees. Tea and Coffee Trade Journal, 1914, XXVI: 340-341

MISCELLANEOUS

CULTURED coffee activities. The Tea and Coffee Trade Journal, 1921, XLI:456-458.

GIRAUD, A. Le café perfectionné. *Paris*, 1846.

HARRIS, WILLIAM B. Making coffee for the consumer. Tea and Coffee Trade Journal, 1914, XXVI: 335-338.

How soluble coffee is made. The Tea and Coffee Trade Journal, 1921, XLI:162-166.

PREPARATION of coffee for use. Penny Magazine, III: 228.

WALKER, J. Handbook of coffee pulpers and pulping. *Kandy, Ceylon*, 1894: 36 pp.

MODIFICATIONS, CAFFEIN-FREE, ETC.

DANIELS, CLINTON K. Daniels' golden coffee. 1882, 3 pp.

DETOXICATION of coffee. Scientific American, Mar. 27, 1915, CXII: 292.

NON-TOXIC coffee and tea. Scientific American, Nov. 13, 1909, CI: 346.

WIMMER, K. Caffeinless coffee. Scientific American, Apr. 11, 1908, XCVIII: 258.

POLISHING AND COLORING

HALLEUX, EDMOND. Le commerce des cafés avariés colorés ou enrobés. Annales des Falsifications, 1909, II, No. 7: 201-206.

MORPURGO, G. Notizie sulla colorazione artificiale del caffè e sui mezzi scoprirla. *Orosi*, 1897, XX: 397–403.

RAUMER, E. VON. Ueber den Nachweis künstlicher Färbungen bei Rohkaffee. Forschungs-Berichte über Lebensmittel, 1896. III: 333-338.

SAUVAGE, ÉDOUARD. Note sur les cafés verts lustrés-colorés. Leur rôle commercial. Annales des Falsifications, 1910, III: 113-117.

ROASTING AND GRINDING

ACH, F. J. Roasting costs and accounting. The Tea and Coffee Trade Journal, 1912, XXIII: 133.

BRAND, CARL W. Increased packing costs. The Tea and Coffee Trade Journal, 1916, XXXI:567-570.

BURNS, A. LINCOLN. Factory efficiency. The Tea and Coffee Trade Journal, 1912, XXIII:30-33.

DAUSSE. Manuel de l'amateur du café, ou l'art de torréfier les cafés convenablement, basé sur l'analyse chèmique. *Paris*, 1846.

ELECTRIC coffee roasting in Germany. Electrical World, 1906, XLVIII: 117–178.

EVOLUTION of the coffee roaster. Tea and Coffee Trade Journal, 1910, XVIII: 390-392.

GILLIES, EDWIN J. Getting a roasting profit. The Tea and Coffee Trade Journal, 1912, XXIII:65-68.

HOLSTAD, S. H. Keeping tab on costs. The Tea and Coffee Trade Journal, 1912, XXIII:68-70.

KING, JOHN E. Grinding and packing coffee. The Tea and Coffee Trade Journal, 1917, XXXIII: 552-555.

KNOWLTON, H. S. Power installation of a coffee-roasting and spice-grinding plant. Electrical World, 1905, XLV: 678–681.

MCGARTY, M. J. Scientific coffee roasting. The Tea and Coffee Trade Journal, 1916, XXXI: 336-337.

TURCQ DES ROSIERS, LE. Le café: une révolution dans ses procédés de torréfaction. *Paris*, 1890.

WILHELM, R. C. The color of the roast. The Tea and Coffee Trade Journal, 1916, XXXI: 428-429.

WRIGHT, GEORGE S. Automatic weighing tests. The Tea and Coffee Trade Journal, 1915, XXIX: 568-570.

ZINSMEISTER, LEE G. Roasting economies. Tea and Coffee Trade Journal, 1914, XXVII: 558-561; 1915, XXIX: 545–550.

MEDICINAL QUALITIES AND USES

AS ANTISEPTIC AND DISINFECTANT

BARBIER. Le café comme désinfectant. Journal de Médecine et Pharmacie de l'Algérie, 1881, VI: 315–318.

CRANE, W. H. and FRIEDLANDER, A. The antiseptic qualities of coffee. American Medicine, 1903, VI: 403–407.

HEIM, L. Ueber den antiseptischen Werth des gerösteten Kaffees. Münchener medicinische Wochenschrift, 1886, XXXIV: 293–312.

OPPLER. Der Kaffee als Antisepticum. Deutsche militärärztliche Zeitschrift, 1885, XIV: 567–577.

GENERAL

AIGNANT OU AIGNAN. Le preste médecin, avec un traité du thé, du café, en France. *Paris*, 1606.

B., W. Coffee, its origin, properties and virtues. *London*, 1908.

BLEGNY, N. DE. Le bon usage du thé, café et du chocolat pour la prevention et la guerison des maladies. *Paris*, 1687.

BOUTEKOË, CORNEILLE. Le thé, le café, et le chocolat. 1699.

BRADLEY, RICHARD. The virtue and use of coffee, with regard to the plague, and other infectious distempers. *London*, 1721. 34 pp.

BRILLIÉ, L., and DUPRÉ. E. Étude sur les cafés. Communication a la Société francaise d'hygiène. *Paris*, 1889.

CHICOU, T. Du café en hygiène et en thérapeutique. *Paris*, 1859.

DAUPLEY, C. E. Étude sur le café; ses applications à la médecine. *Paris*, 1867.

ELOY, NICHOLAS F. J. Question medico-politique, si l'usage de café est avantageux à la santé, et s'il peut se conciler avec le bien de l'etat dans les provinces belgique. 1781.

FONTAINE. Hernie traité par l'infusion de café. *Paris*, 1865.

LANDARRHILCO, OSMIN. Nouvelles propriétès thérapeutiques du café vert dans les affections du foie, les coliques hépatiques et le diabètè. *Montpellier*, 1888.

LECONTE, A. H. Emploi du café thérapeutique. *Strasbourg*, 1859.

MAGRI, D. Virtu del Kafe, bevanda introdotta nuovamente nell' Italia. 2 ed. *Roma*, 1671, 16 pp.

MARVAUD, ANGEL. Les boissons aromatiques. Le café. In his, Les aliments d'épargne, *Paris*, 1874. 2 pt., pp. 292–320.

MUNDAY (MUNDY), HENRY. Opera omnia—Physica de aere vitali, esculentis, et potutentis, cum appendice de pasergris in victu et chocolatu, thea, coffea, tobaco. *Leyden*, 1685.

PETIT, H. De la prolongation de la vie humaine par le café. 2 éd. *Paris*, 1862.

RICHET, CH. Les poisons de l'intelligence, l'alcool, le chloroforme, le haschich, l'opium, le café. *Paris*, 1877.

TRIFET, A. Du café, de ses effets sur l'homme. *Paris*. 1847.

VILLEMUS, A. Du café et de ses principales applications thérapeutiques. *Paris*, 1875.

VIREY, J. J. Nouvelles considérations sur l'histoire et les éffets hygiéniques du cafés et sur le genre coffea. *Paris*, 1816.

WEISS, C. C. Coffee arabica nach seiner zerstörenden Wirkung auf animalische Dünste als Schutzmittel gegen Contagion vorschlagen. *Friberg*, 1832.

Periodicals

ALLEGED medicinal properties of the husk of the coffee bean, The. Lancet, 1902, II: 944.

BALZAC. Traité des excitants modernes. Alcool. sucre, thé, café, tabac. Extrait fact. de la Revue de Paris. 1852.

BENEFICIAL effects of coffee as a drink. Review of Reviews, 1906, XXXIII: 245–246.

BOLTENSTERN, VON. Zur Bewerkung des Kaffees als Volksgenussmittel. Deutsche Arzte-Zeitung, 1905, 457-461.

CARON, D. A. Coffee and milk as a diet. Journal of Franklin Institute, LXIV:349.

DALSON, A. T., and WETHERILL, C. M. Coffee as a beverage. Journal of Franklin Inst. LX: 60-111.

DOMBROVSKI, I. F. Kofe i yevo liechebniya svoista. (Coffee and its medical properties.) Vrachebnaya Gazeta, 1901, VIII: 733–736.

DUJARDIN-BEAUMETZ. On new cardiac medicaments. Therapeutic Gazette, 1884, n. s. V: 444–449.

DUSART, O. Étude critique sur l'action physiologique et thérapeutique des médicaments dits antidéperditeurs: café, coca, etc. Tribune médicale, 1874, VII: 197–200.

ENGLISH, W. Reply to objections against the use of tea and coffee. Lancet, 1838-4, II: 75.

GOLINER. Ueber unschädlichen Kaffeegenuss. Frauenarzt, 1906, XXI: 205.

GRISWOLD, E. H. Coffee, its uses and medical qualities. Southern Practitioner, 1882, IV: 269.

HAMILTON, W. On the medical properties of the coffee arabica. Pharmaceutical Journal, 1851, X: 450–454.

HOLLAND, J. W. Coffee as a preventive for malarial diseases. Louisville Medical News, 1876, I: 63–65.

HORNEMANN, E. Kaffe-Sporgsmaalet. (Hygienic value of coffee.) Hygieniske Meddelelser, *Kjbenhavn*, 1864. IV: pt. 3, 286-310.

MEDICINAL properties of the husk of the coffee bean. Scientific American Supplement, Mar. 7, 1903, LV: 22-123.

ON the medical properties of coffea arabica. Pharmaceutical Journal, X: 450–454.

PAUL, J. On coffee, its medical, disinfecting, and dietetic properties. New Jersey Medical Reporter, 1851-2, V: 265, 297.

ROQUES, J. Note sur les propriétés médicales du café. Bulletin général de Thérapeutique, 1835, VIII: 289–294.

"S. CULAPIUS." The healthfulness of coffee. Tea and Coffee Trade Journal, 1913, XXV: 27–28, 129-130, 239-240, 345-346, 449-450; 1914, XXVI: 137-138.

SQUIBB. Tea and coffee as therapeutic substitutes for coca and guarana. Ephemeris of Materia Medica, 1884, II: 637–647.

STUTZER, A. Neues über die Wirkung der daraus hergestellten Getränke in gesundheitlicher Beziehung. Centralblatt für allgemeine Gesundheitspflege, 1892, XI: 145–151.

WEITENWEBER, W. R. Diätetischmedicinische Würdigung des Caffees. Oesterreichische medicinische Wochenschrift, 1845, pp. 1551, 1583.

—Therapeutische Abhandlung über den Caffee. Medicinische Jahrbucher des kaiserl. königl. österreichischen Staates. 1846. LVIII:1, 139.

PHYSIOLOGICAL EFFECTS

GENERAL USE AND MISUSE, COFFEE-HABIT, ETC.

ALCOTT, WILLIAM ALEXANDER. Tea and coffee: their physical, intellectual, and moral effects on the human system. rev. ed. *Manchester*, 1877. 31 pp. Also in German, *Berlin*, 1869.

BOEHMER, G. R. Pr. . . . inessentiae coffeae in novellis publicis nuper commendatae virtutem inquirit. *Wittebergae*, 1782.

BOMBY, R. Le caféisme. *Paris*, 1905.

BONA, G. DALLA. Dell' uso e dell' abuso del caffè, dissertazione storico-fisico-medica. *Verona*, 1751.

BOUCARD, E. Du caféisme; contribution à une étude synthetique. *Paris*, 1899.

BRAEUNINGER, J. M. De potus caffè usu et abusu. *Erfordiae*, 1725.

BRUCHMAN, FRANCIS ERNEST. A treatise on coffee and a condemnation of its use. *Brunswick*, 1727.

Buc'hoz, P. J. Dissertation sur l'utilité et les bons et mauvaises éffets du tabac, du café, du cacao et du thé. *Paris*, 1775.

Calkins, A. Opium and opium appetite, with notices of alcoholic beverages, Cannabis indica, tobacco and coca, and tea and coffee, in their hygienic aspects and pathologic relations. *New York*, 1871.

Calvert, Esprit. An potus café quotidianus valetudini tuendæ vitæ que producendæ noxius? *Avenione*, 1762.

Camerarius, E. Dissertationes tres, exhibentes. . . III. Usum et abusum potum, "Thee," et "Caffe" in his regionibus. *Tubingae*, 1694.

Cathomas, J. B. Ist der Kaffee und Teegenuss gesundheitsschädlich? *St. Gallen*, 1910.

Crothers, T. D. (Effects of the coffee habit.) In his, Morphinism and narcomanias from other drugs. 1902, pp. 303-305.

Davier de Breville, J. P. An a frequentiori potu café vita brevior? *Paris*, 1715.

Debay, A. Les influences du chocolat, du thé et du café sur l'economie humaine. *Paris*, 1864.

de Jussieu, Joseph. Litteratis ne salubris coffeae usus. *Paris*, 1741.

Deltel, É. Du café, de ses effets physiologiques, et de son emploi en thérapeutique. *Paris*, 1851.

Duncan, Daniel. Wholesome advice against the abuse of hot liquors, particularly coffee, tea, chocolate, brandy and strong waters. *London*, 1706.

Garnier, A. Inaestio medica . . . discutienda in Scholis Medicarum . . . Joanne-Francisco Couthier, Praeside: An parisinio frequento potus thé, frequenti potu caffé salubrior? *Paris*, 1749. 4 pp.

Gayant, L. An a frequentiori potu café vita brevior? *Paris*, 1715.

Germany. Kaiserliches Gesundheitsamt. Der Kaffee; gemeinfassliche Darstellung der Gewinnung, Verwertung und Beurteilung des Kaffees und seiner Ersatzstoffe. *Berlin*, 1903. 174 pp.

Gleditsch, J. G. De potus cofe abusu catalogum morborum augente. *Lipsiae*, 1744.

Grimmann, J. N. De coffee potus usu noxio. 1730.

Günther, Leo. Der Caffee als Hausgetrank. Eine Warnung. *Leipzig*, 1907.

Hahneman, S. A treatise on the effects of coffee. *Louisville*, 1875.

Handbook of the medical sciences. Article on coffee, v. III: p. 190.

Hilscherus, S. P. Pr. . . . de abusu potus caffee in sexu sequiori. *Jena*, 1727.

Huss, M. Om kaffe, dess bruk och missbruk; en folkskrift. *Stockholm*, 1865.

Husson, C. Le café, la bière et le tabac. Étude physiologique et chemique. *Paris*, 1879. 206 pp.

Klamann, Carl, publisher. Der Kaffee in seiner heutigen Bedeutung als Nahrungs- und Genussmittel. *Hamburg*, 1882. 48 pp.

Knoll, J. C. G. Lettre à un ami sur les opérations du caffé. *Quedlinbourg*, 1752.

Lavedan, Antonio. Tratado de los usos, abusos propriedades y virtudes del tabaco, café, té y chocolate. *Madrid*, 1796. 237 pp.

Lemare-Piquet, de Honfleur. Etudes expérimentales de médecin, contenant des observations sur l'action dynamique du café. *Paris*, 1864.

Linne, Carl von. Dissertatio medica, in qua potus coffeae, leviter adumbratur. *Upsaliae*, 1761. 18 pp.

Lorand, Arnold. Coffee. In his, Health through rational diet. *Philadelphia*, 1913. pp. 309-313. Excerpts reprinted in, Tea and Coffee Trade Journal, 1913, XXIV: 24-26.

—On other stimulants—tea, coffee, cocoa, tobacco: their merits and disadvantages. In his, Old age deferred, *Philadelphia*, 1910. pp. 362-367. Excerpts reprinted in, Tea and Coffee Trade Journal, 1911, XX: 188-190.

Mappus, M. De potu café. *Argentorati*, 1693.

Marchand, N. L. Recherches organographiques et organogéniques sur le coffea arabica. L. *Paris*, 1864. 48 pp.

Masson, V. P. De l'usage et de l'abus du thé et du café. *Paris*, 1848.

Medicus, G. F. Anacrisis medico-historico-diaetetica de caffe et chocalate, etc., 1720.

Meisner, L. F. De caffe . . . anacrisis medico-historico-diaetetica. *Norimbergae*, 1721.

Méplain, F. Du café. Étude de thérapeutique physiologique. *Paris*, 1868.

Michaelis, A. De koffie (Coffea arabica) als genoten geneesmiddel, naar hare botanische, dieëtetische en geneeskrachtige eigenschappen. *Amsterdam*, 1894.

Moseley, B. M. A treatise concerning the properties and effects of coffee. *London*, 1785. 69 pp.

Omout, R. Contribution à l'étude du caféisme. *Montpellier*, 1904.

Ottleben, F. B. De potus ex coffeae seminibus parati noxio effectu. *Helmstadii*, 1870.

Plaz, A. G. De potus cofe abusu catalogum morborum augente. *Lipsiae*, 1763. *Also*, in his, De jucundis morborum causis, *Lipsiae*, 1754. pp. 20-54.

Poore, G. V. Coffee and tea. *London*, 1883. 44 pp

Prozorovski, I. D. Vliyanïe kofe i niekotorïkh yevo surrogatov na bolïeznetvornïye nizshïe organizmï. (The effect of coffee and of some of its substitutes upon pathogenic organisms.) *St. Petersburg*, 1895.

Rambaldi, A. Ambrosia arabica, overo della salutare bevanda café. *Bologna*, 1691.

Riant, Aimé. Le café, le chocolat, le thé. *Paris*, 1875. 160 pp.

Roche, A. Du café noir et de la caféine au point de vue de l'action physiologique et des applications à l'hygiène. *Montpellier*, 1878.

Sabarthez, H. Étude physiologique du café. *Paris*, 1870.

Saint-Arroman, A. De l'action du café, du thé, et du chocolat sur la santé, et de leur influence sur l'intelligence et le moral de l'homme. *Bruxelles*. 1845. *Also* in English, *Philadelphia*, 1846. 90 pp.

Saleeby, C. W. Tea, coffee, cocoa and tobacco. In his, Health, strength and happiness, *New York*, 1908. pp. 190-208. Reprinted in, Tea and Coffee Trade Journal, 1908, XV: 299-301

—Worry, drugs and drink. In his, Worry: the disease of the age, *New York*, 1907. pp. 93-110. Excerpts reprinted in, Tea and Coffee Trade Journal, 1911, XX: 190-192.

Samuel, H. De usu et abusu potus coffee. *Duisburgh ad Rhenum*, 1747.

Schwarzkopf, S. A. Der Kaffee in Naturhistorischer diaetetischer und medicinischer Hinsicht, seine Bestandtheile, Anwendung, Wirkung und Geschichte. *Weimer*, 1831.

Silvestri, Domenico. Dissertazione chimico-medica sul caffé. *Genova*, 1815.

SINCLAIR, W. J. Beverages: tea, coffee, etc. (Health lectures.) *Manchester*, 1881.

SMITH, HUGH. An essay on the nerves . . . to which is added an essay on foreign teas, with observations on mineral waters, coffee, and chocolate, etc. *London*, 1794.

SPARSCHUCH, H. Potus coffeae leviter adumbratur. *Upsaliae*, 1761.

TRIFET, H. A. Histoire et physiologie du café. De son action sur l'homme à l'état de santé et à l'état de maladie. *Paris*, 1864.

VAN DER TRAPPEN, J. E. Specimen historico-medicum de Coffea, etc. Trajecti ad *Rhenum*, 1843. 152 pp.

WEIDENBUSCH, N. De noxis ex abusu potus caffé in corpore humano. *Moguntiae*, 1769.

WEIGL, J. Der Kaffeegenuss, eine Schädigung der Leistungs- fähigheit. *München*, 1904.

—Kaffeetrinken und Gesundheit, 2 ed. *München*, 1904.

WEITENWEBER, WILHELM RUDOLPH. Der arabische Kaffee, in naturgeschichtlicher, chemischer, diätetischer und ärztlicher Beziehung für aerzte und nichtärzte geschildert. *Prag*, 1837. 180 pp.

ZIMMERMANN, ALBRECHT. Eenige pathologische en physiologische waarnemingen over koffie. *Batavia*, 1904. 105 pp.

Periodicals

ABD-AL-KADER ANSARI DJEZERI HANBALI. Auszug aus dem Werke: Deutliche Darstellung über den erlaubten Gebrauch des Kaffee's; aus dem Arabischen von von Sontheimer. Wissenschaftliche Annalen der gesammten Heilkunde, 1834, XXIX: 129–160.

ABELIN, J. and PERELSTEIN, M. Ueber die fluchtigen Bestandteile des Kaffees. Münchener medicinische Wochenschrift, 1914, LXI: 867.

AMORY, ROBERT. Coffee as a beverage: its use and abuse. Boston Medical and Surgical Journal, 1909, CLX: 611–613. *Also*, Journal of Inebriety, 1910, XXXII: 23–27; Scientific American Supplement, Jan. 1910, LXIX: 26–27.

BALLAND, A. Les cafés. Annales d'Hygiéne, 1904, 4 ser., II: 497–532.

BARDET, G. Un cas d'empoisonnement aigu par le café. Bulletin général de Thérapeutique, 1911, CLXII: 56–59.

BENT, T. On the disorders produced by the use of tea and coffee, with remarks on their treatment. Lancet, 1843, I: 893.

BOETTICHER, J. G. Vertigo satis vehemens a nimio potu coffee, allisque in diaeta commissis erroribus. Acta physico-medica Academiae Caesareae naturae curiosorum, etc. 1742, VI: 158–160.

BORUTTAU, H. Zur Frage der wirksamen Kaffeebestandteile. Zeitschrift für physikalische und diätetische Therapie, 1908, XII: 138–145.

BOURET, O. Un nouveau cas de caféisme chronique. L'Écho médical du Nord, 1902, VI: 171–178.

BRAM, I. The truth about coffee drinking. Medical Summary, 1913, XXXV: 168–173.

BRIDGE, N. Coffee-drinking as a frequent cause of disease. Association of American Physicians, Transactions, 1893, VIII: 281–288.

CABANÈS. Une légende sur le café. Journal de Médecin de Paris, 1892, 2 ser., IV: 511. *Also*, translated, Cincinnati Lancet-Clinic, 1893, n. s. XXX: 13–17.

CHARANNE, H. Coffee. Journal of the Medical Society of New Jersey, 1911-2, VIII: 19–22.

CHEEVER, D. W. Properties of coffee. Atlantic Monthly, III: 85.

COLE, J. On the deleterious effects produced by drinking tea and coffee in excessive quantities. Lancet, 1832-3, II: 274–478.

COLETTI, F. Sull' azione del caffé. Gazzetta medica italiana, provincie venete, 1862, V: 424, 429, 440, 458; 1863, VI: 20.

COMBEMALE F. Quelques réflexions à propos d'un cas de caféisme chronique. Bulletin de la Société centrale de Médecine du Nord, 1900, 2 ser., IV: 77-87. *Also*, L'Écho médical du Nord, 1900, IV: 97–100.

COMMAILLE, A. Étude sur le café. Moniteur scientifique, 1876, 3 ser., VI: 779–785.

COUGHLIN, R. E. Use and abuse of coffee. New York Medical Journal, 1911, XCIV: 283–285.

COULIER. Note sur le café. Recueil de Mémoires de Médecine, de Chirurgie et de Pharmacie militaires, 1864, 3 ser., XI: 508–511.

CRETAL, M. Un cas de caféisme chronique. Bulletin de la Société centrale de Médecine du Nord, 1901, 2 ser., V: 165–167. *Also*, L'Écho médical du Nord, 1901, V: 318.

CURSCHMANN, H. Ein Fall von Kaffee-intoxication. Deutsche Klinik, 1873, XXV: 377–380.

DANIEL, M. Die Schädlichkeit des Kaffees. Leipziger medizinische Monatsschrift, 1907, XVI; 38–40.

DA SILVA, P. J. O café e a saude publica. Correiro (O) medico de Lisboa, 1873-4, III: 282; 1874-5, IV: 27, 206.

DORVAULT. Note pharmacologique sur le café et la caféine. Bulletin général de Thérapeutique, 1850, XXXVIII: 498–502.

DUPOUY. De l'influence du café au point de vue social et hygiènique. Médecin, 1878, IV: no. 44, 1.

FEGRAEUS, E. Kaffee missbruket och folkhälian. (The misuse of coffee and health.) Hälsovänner, 1913, XXVIII: 257–261.

FORT, J. A. Des effets physiologiques du café; d'après des expériences faites sur l'auteur. Bulletin général de Thérapeutique, 1883, CIV: 550–554. *Also*, Comptes rendus de l'Académie des Sciences, 1883, XCVI: 793–796.

FRANKEL, F. HULTON. Coffee truly a food. The Tea and Coffee Trade Journal, 1917, XXXII: 142.

GASPARIN. Sur le régime alimentaire des mineurs belges; influence remarquable du café. Bulletin général de Thérapeutique, 1850, XXXVIII: 380–383. *Also*, Comptes rendus de l'Académie des Sciences, 1850, XXX: 397–403.

GILLES DE LA TOURETTE, and GASNE. Sur l'intoxication chronique par le café. Bulletin et Mémoires de la Société médicale des Hôpitaux, 1895, 3 ser., XII: 558–566.

GOUREWITSCH, D. Ueber des Verhalten des Coffein im Tierkörper mit Rücksicht auf die Angewöhnung. Archiv für experimentelle Pathologie und Pharmakologie, 1907, LVII: 214–221.

GUELLIOT, O. Du caféisme chronique. Union médicale et scientifique du Nord-Est, 1885, IX: 181, 221.

GUIMARAES, E. A. R. Sur l'action physiologique du café. Comptes rendus de l'Académie des Sciences, 1882, XCV: 1372–1374.

—Sur l'action physiologique et hygiénique du café Archives de Physiologie normale et pathologique, 1884, 3 ser., IV: 252–286.

—De l'usage et de l'abus du café. Archives de

Physiologie normale et pathologique, 1883, 3 ser., I: 312–319.

GUIMARAES, E. A. R. and RAPOSO, A. E. J. Acção physiologica e therapeutica do café. Gazeta medica brazileira, 1882, I: 121, 179, 228, 275.

H., D. P. An effect of coffee. British Medical Journal, 1910, I: 300.

HARTWICH, C. Beiträge zur Kenntniss des Kaffees. Zeitschrift für Untersuchung der Nahrungs- und Genussmittel, 1909, XVIII: 721–733.

HEINRICH, J. B. Die Kaffefrage in ihrer volkshygienischen und volkswirtschaftlichen Bedeutung. Medizinische Klinik, 1906, II: 383–385. *Also,* in Dutch, Geneeskundige Courant voor het Koningrijk der Nederlanden, 1907, LXI: 321.

HELBICH. Wypadki z naduzycia kawy. (On the abuse of coffee.) Gazeta lekarska, 1870, IX: 257–262.

HENNIG, C. Der Kaffee vom ärztlichen Standpunkte. Memorabilien. Heilbroun, 1882, n. s., II: 217–221.

—Weitere Belge für das Schädliche des orientalischen Kaffees betreffs Gesunder. Memorabilien. Heilbroun, 1886, n. s., VI: 468.

HUEPPE, F. Ueber den Missbrauch von Kaffe, Blätter für Gesundheitspflege, 1906, VI: 121–126.

JACKSON, S. On the influence upon health of the introduction of tea and coffee in large proportion into the dietary of children and the labouring classes. American Medical Association, Transactions, 1849, II: 635–644. *Also,* American Journal of Medical Science, 1849, n. s., XVIII: 79–86.

KARG. Ueber den Kaffee. Archiv gemeinnütziger physischer und medizinischer Kenntniss, 1788-9, II: 1, 584.

LEHMANN, JULIUS. Ueber den Kaffee als Getränk in chemisch- physiologischer Hinsicht. Annalen der Chemie, 1853, LXXXVII: 205–217. *Also,* in English, Medical Examiner, 1854, X: 19, 98.

LEREBOULLET, L. Le caféisme. Gazette hebdomadaire de Médécine et Chirurgie, 1885, 2 ser., XXII: 626–628.

LEWIS, CHARLES. Educating the physician. The Tea and Coffee Trade Journal, 1914, XXVII: 544-547.

LIEBIG, J. VON. Coffee. Pharmaceutical Journal, 1886, II. pt. 7, 412, 416. *Also,* in German, Zeitschrift für gerichtliche Medicin, 1867, III: 78, 88.

LLOYD, JOHN URI. Concerning coffee. Tea and Coffee Trade Journal, 1913, XXV: 555–560.

LOVE, I. N. Coffee; its use and abuse. Journal of the American Medical Association, 1891, XVI: 219–221.

MENDEL, F. Die schädlichen Folgen des chronischen Kaffeemissbrauchs. Berliner klinische Wochenschrift, 1889, XXVI: 880-887.

NILES, GEORGE M. A dietetist on coffee. Tea and Coffee Trade Journal, 1910, XIX: 27–29.

—Some facts and fallacies about coffee. Gulf States Journal of Medicine and Surgery, 1910, XVI: 352–357.

NYSTRÖM, A. Föredrag öfver kaffe och thé. Upsala Läkareforeninge Förhandlingar, 1865-6, I: 129–132.

PAOLUCCI, F. Dell' infusodi caffè. Il Raccoglitore medico, 1882, 4 ser., XVIII: 531–541.

PAPILLON, G. E. Accidents consécutifs à la suppression brusque du café chez les caféiques; café et antipyrine. France médicale, 1899, XLVI: 753.

POULET, V. Inconvénients de l'usage des caféiques. Bulletin médical de Vosges, 1897-8, II, no. 45, 45–55.

PRESCOTT, A. B. Coffee in comparison with tea. Physician and Surgeon, *Ann Arbor,* 1880, II: 337–348.

RABUTEAU. Sur un moyen propre à annuler les effets de l'alimentation insuffisante. Comptes rendus de l'Académie des Sciences, 1870, LXXXI: 426–428.

RICHARDSON, H. The coffee habit. Dietetic and Hygienic Gazette, 1906, XXII: 385–389.

ROCH, M. La caféisme chronique. Archives des Maladies du Côeur, 1916. IX: 19-33. *Also,* Revue médicale de la Suisse Romande, 1914, XXXIV: 217–219.

SCOHY. De l'action du café. Archives belges de Médecine militaires. 1857, XX: 183–189.

SCHÜRHOFF. Ist der maasvolle Gebrauch von Alkohol, Kaffee, Tabac usw. dem Menschen schädlich? Deutsch - Amerikanische Apotheker - Zeitung, 1911-2, XXXII: 4.

TRIGG, CHARLES W. Coffee's dietetic value. Tea and Coffee Trade Journal; 1919, XXXVII: 270.

—Saccharin in tea and coffee. Tea and Coffee Trade Journal, 1920, XXXVIII: 697.

UNZER, J. A. Vom Caffee. Der Arzt, 1769, II: 126–139.

USE of coffee as a beverage. Harper's Weekly, Jan. 21, 1911, LV: 26.

VIAUD. Le vertige stomacal et le caféisme. Tribune médicale, 2 ser., XXIX: 928–930.

WALLACE. On the decrease in use of coffee as a beverage. Analyst, 1884, IX: 42–44. *Also,* Polyclinic, 1888-4, I: 169.

WESSELHOEFT, W. On the effects of coffee and their remedy. Journal of Inebriety, 1909, XXXI: 176–182. *Also,* Boston Medical and Surgical Journal, 1909, CLX: 608–611.

WILEY, HARVEY W. Our national beverages. Tea and Coffee Trade Journal, 1912, XXII, Supplement to no. 6, 33-38.

—Temperance in tea and coffee drinking. Tea and Coffee Trade Journal, 1910, XIX: 273-274.

WILHITE, P. A. Coffee and its effects. Transactions of the South Carolina Medical Association, 1882, XXXII: 83-86.

ZOBEL. Reflexionen über kaffeeïnhaltige Genussmittel. Vierteljahrsschrift für die praktische Heilkunde, 1858, II: 105–136.

OF CAFFEIN-FREE COFFEE

BERTRAND, GABRIEL. Sur les cafés sans caféine. Comptes rendus de l'Académie des Sciences, 1905. CXLI: 209-211. *Also,* Bulletin des Sciences Pharmacologiques, 1905, XII: 152.

BORDET, M. Sur un café rendu inoffensif par la décaféination. Bulletin général de Thérapeutique, 1910, CLIX: 770–773.

CHASSEVANT, ALLYRE. Emploi du café décaféiné en thérapeutique. Bulletin général de Thérapeutique, 1912, CLXIV: 860–864.

EINFELDT, W. Koffeïnfreier Kaffee. Therapeutische Neuheiten, 1909, IV: 83–86.

GLÜCKSMANN, S., and GÉRINI, C. Einige Untersuchungen über die physiologische Wirkung von koffeïnfreien kaffee. Zeitschrift für Untersuchung der Nahrungs- und Genussmittel, 1910. XX: 100.

HARNACK, E. Ueber den coffeïnfreien Kaffee Deutsche medizinische Wochenschrift, 1908, XXXIV: 1943-1946; 1909, XXXV: 254.

KAKISAWA. Kommt dem koffeïnfreien Kaffee eine diuretische Wirkung su? Archiv für Hygiene, 1913, LXXXI: 43–47.

LEHMANN, K. B. Die wirksamen und wertvollen Bestandteile des Kaffeegetränks mit besonderer Berucksichtigung des koffëinfreien Kaffees Hag. Münchner medizinische Wochenschrift, 1913, I.X: 281, 357.

LEHMANN, K. B., and WILHELM, F. Besitzt das Coffeon und die coffeïnfreien Kaffeesurrogate eine kaffeeartige Wirkung. Archiv für Hygiene, 1898, XXXII: 310–326.

LENDRICH, K., and MURDFIELD, R. Coffeïnfreier Kaffee. Zeitschrift für Untersuchung der Nahrungs- und Genussmittel, 1908, XV: 705–715.

MERCK's manual of the materia medica. 4th ed. *New York*, 1911. Dekofa, pt. I, p. 28.

MUNZ, P. Kaffeïnfreier Kaffee, ein neues Genussmittel. Arzt als Ersieher, 1908, IV: 40.

REINSCH. Kaffeïnfreier Kaffee. Berichte des Stadt Untersuchungs Amtes Altona, 1906.

SCHLESINGER, E. Zur Gesichte des coffeïnfreien Kaffees. Deutsche medizinische Wochenschrift, 1908, XXXIV: 2228.

WIMMER, K. Ueber coffeïnfreien Kaffee, ein neues Genussmittel. Verhandlung der Gesellschaft deutscher Naturforscher und Aerzte, 1909, pt. 2, 111–113.

OF CHEWING COFFEE

COFFEE-CHEWING habit. Current Literature, 1903, XXXIV: 496.

OF DIFFERENT CONSTITUENTS

BUTLER, GEORGE F. (Caffein). In his, Materia Medica, therapeutics and pharmacology. 5th ed., 1906. pp. 256–259.

HARE, H. AMORY. Physiological action of caffein. In his, Practical therapeutics. 13th ed., 1909. p. 142.

HENNEGUY, LOUIS-FELIX. Caféine. In his, Étude physiologique sur l'action des poisons, pp. 85–89. Inaugural dissertation, *Montpellier*, 1875.

HUCHARD, HENRY. De la caféine dans les affections du cœur. *O. Bois*, 1882.

JOHANNSEN. Über die Wirkungen des Kaffein. Inaugural dissertation, *Dorpat*, 1869.

KUNKEL, A. J. Handbuch der Toxikologie. *Jena*, 1899. 2 v. See index: Coffein, Kaffee.

LEBLOND. Étude physiologique et thérapeutique de la caféine. *Paris*, 1883. 173 pp.

LEWIN, L. (Caffein poisoning.) In his, Traité de toxicologie, 1903, pp. 690–692.

MEYER, HANS H. and GOTTLIEB, R. Pharmacology, clinical and experimental, tr. by John T. Halsey. *Philadelphia* and *London*, 1914. 604 pp. See index: Caffeine.

PARISOT, E. Étude physiologique de l'action de la cafeine. *Paris*, 1890. 112 pp.

POTTER, S. O. L. Caffeina, caffeine. Physiological action. Therapeutics. In his, Therapeutics, materia medica and pharmacy, 4th ed. 1912. pp. 186–192.

RIVERS, W. H. R. The influence of alcohol and other drugs on fatigue. II. Caffeine. *London*, 1908. pp. 22–50, 127–130.

SCHUTZKWER, NACHUM. Das Coffein und sein Verhalten im Thierkörper. Inaugural dissertation, *Königsberg*, 1882. 25 pp. *Also*, Schmidt's Jahrbücher, 1883, CXCVIII: 232–233.

VOIT, CARL. Untersuchung über die Wirkung des Kaffee's auf den thierischen Organismus. In his, Untersuchung über den Einfluss des Kochsalzes, des Kaffee's und der Muskelbewegungen, *München*, 1860. pp. 67–147.

WEIGL, J. Das Koffein. *Leipzig*, 1905.

WILHELM, F. Ist das Coffeon an der Kaffeewirkung beteiligt? *Würzburg*, 1895.

Periodicals

ALBANESE, MANFREDI. Ueber die Bildung von 3-Methyl-xanthin aus Coffeïn im thierischen Organismus. Berichte der deutschen chemischen Gesellschaft, 1899, XXXII; no. 360, 2280–2282.

—Ueber das Verhalten des Coffeïns und des Theobromins im Organismus. Archiv für experimentelle Pathologie und Pharmakologie, 1895, XXXV: 449–466.

ALBERS, J. F. H. Ueber die eigenthümliche Wirkung des Theinum und Coffeïnum citricum auf den thierischen Körper. Deutsche Klinik, 1852, IV: 577–579.

AUBERT, H. Ueber den Coffeingehalt des Kaffeegetränkes und über die Wirkungen des Coffeins. Archiv für die gesammte Physiologie des Menschen und der Thiere, 1872, V: 589–628.

BINZ, C. Beitrag zur Toxikologie des Coffeïns. Archiv für experimentelle Pathologie und Pharmakologie, 1891, XXVIII: 197–200.

BONDZYŃSKI, ST. and GOTTLIEB, R. Ueber Methylxanthin, ein Stoffwechselprodukt des Theobromin und Coffeïn. Archiv für experimentelle Pathologie und Pharmakologie, 1895, XXXVI: 45–55. *Also*, Berichte der deutschen chemischen Gesellschaft, 1895, XXVIII: no. 221, 1113-1118.

BUSQUET, H. and TIFFENEAU, M. Du rôle de la caféine dans l'action cardiaque du café. Comptes rendus de l'Académie des Sciences, 1912, CLV: 362–365.

COGSWELL, CHARLES. On the local action of poisons. Lancet, 1852, No. 2: 488-491.

FÉRÉ, CHARLES. Note sur l'influence de la théobromine sur le travail. Comptes rendus de la Société de Biologie, 1901, 2. ser., III: 593-594, 627–629.

FRANKEL, F. HULTON. Caffein as a body warmer. Tea and Coffee Trade Journal, 1916, XXXI: 354–355.

GANZER, E. Ueber ein neues Verfahren der Kaffee-Entgiltung auf physikalischer Grundlage. Der praktische Arzt, 1914, LIV: 152–175.

GERBIS, H. Vergiftung mit anilinölhaltigen Kaffee. Aerztliche Sachverstandigen-Zeitung, 1913, XIX: 467.

GERATY, T. Poisoning by citrate of caffeine. Lancet, 1889, I: 219.

GOUGET, A. Coffee and tea poisoning. Journal of Inebriety, 1908, XXX: 92–102.

HANNA, W. J. Chronic coffee poisoning. Occidental Medical Times, 1903, XVII: 148.

HARE, H. A. and MARSHALL, J. The physiological effects of the empyreumatic oil of coffee or caffeon. Medical News, 1888, LII: 337–339.

HARNACK, E. Zur Frage nach der Schädlichkeit des Kaffees. Deutsche medizinische Wochenschrift, 1907, XXXIII: 26–28.

HOLLINGWORTH, H. L. Caffein as a stimulant. Tea and Coffee Trade Journal, 1912, XXIII, Supplement to No. 6: 52-56.

IOTEYKO, J. Étude physiologique et mathématique. IX. Caféine. Institut Solvay. Travaux de Laboratoire, 1903, VI: 474–485.

JACOBJ, C., and GOLOWINSKI. Ein Beitrag zur Frage der verschiedenen Wirkung des Coffeïns auf Rana esculenta und Rana temporaria.

Archiv für experimentelle Pathologie und Pharmakologie, 1908, Supplement, 286-298.

KOSCHLAKOFF. Beobachtungen über die Wirkung des citrone sauren Coffeïn's. Virchow's Archiv für pathologische Anatomie und Physiologie, 1864, XXXI: 436-443.

KURZAK. Die Wirkungen des Kaffeins auf Thiere. Schmidt's Jahrbücher, 1861, CIX: 172.

KRÜGER, MARTIN. Ueber den Abbau des Caffeïns im Organismus des Hundes. Berichte der deutschen chemischen Gesellschaft, 1899, XXXII, No. 431, 2818.

—Ueber den Abbau des Caffeïns im Organismus des Kaninchens. Berichte der deutschen chemischen Gesellschaft, 1899, XXXII, No. 488: 3336.

LANGFELD, H. S. Tests with alcohol and caffeine. Psychological Review, 1911, XVIII: 413, 424.

LEVEN, M. Action physiologique et médicamenteuse de la caféine. Archives de Physiologie, 1869, I: 179-189.

LEVINTHAL, WALTER. Zum Abbau des Xanthins und Coffeïns im Organismus des Menschen. Zeitschrift für physiologische Chemie, 1912, LXXVII: 259-279.

MALY, RICHARD, and ANDREASCH, RUDOLF. Studien über Caffeïn und Theobromin. Monatshefte für Chemie (Sitzungs-berichte der Kaiserlichen Akademie der Wissenschaften), 1883, IV: 869-887.

MATTHEWS, W. Observations on the use of coffee as a cause of disease. Northwest Medical and Surgical Journal, 1850-1, VII: 46-50.

PARDI. Ricerche intorno alla funzione spermatogenetica negli animali avvelenati con caffé. Lo Sperimentale, LXV: 17-34.

PESET CERVERA, V. Del envenenamiento por el café. Génio médico-quirúrgico, 1877, XXIII: 670-673.

PÉTRESCO, Z. Sur l'action hypercinétique de la caféine à hautes doses ou doses thérapeutiques. Verhandlungen des X, internationalen medicinischen Congresses, *Berlin*, 1890, II, pt. 4, 5-10.

PILCHER, J. D. Alcohol and caffeine: a study of antagonism and synergism. Journal of Pharmacology and Experimental Therapeutics, 1911, III: 267-298.

REICHERT, E. T. The action of caffein on tissue metamorphosis and heat phenomena. New York Medical Journal, 1890, LI: 456-459.

—The empyreumatic oil of coffee, or caffeone. Medical News, 1890, LVI: 476-478.

RIBAUT, H. Influence de la caféine sur la production de chaleur chez l'animal. Comptes rendus de la Société de Biologie, 1901, LIII (2. ser., III): 295-296.

RIEGEL, F. Ueber die therapeutische Verwendung der Caffein-präparate. Wiener medizinische Blätter, 1884, VII: 615-619. *Also*, Berlin klinische Wochenschrift, 1884, XXI: 289.

RUGH, J. T. Profound toxic effects from the drinking of large amounts of strong coffee. Proceedings of the Philadelphia County Medical Society, 1896, XVII: 195. *Also*, Medical and Surgical Reporter, 1896, LXXV: 549; Quarterly Journal of Inebriety, 1897, XIX: 62-64.

SALANT, WILLIAM, and RIEGER, J. B. Elimination and toxicity of caffein in nephrectomized rabbits. U. S. Dept. of Agriculture. Bureau of Chemistry. Bulletin, 1913, CLXVI.

—Toxicity of caffein: an experimental study on different species of animals. U. S. Dept. of Agriculture. Bureau of Chemistry. Bulletin, 1912, CXLVIII.

SCHMID, JULIUS. Der Abbau methylierter Xanthine. Zeitschrift für physiologische Chemie, 1910, LXVII: 155-160.

SCHMIEDEBERG, OSWALD. Ueber die Verschiedenheit der Coffein-wirkung an Rana temporaria L. und Rana esculenta L. Archiv für experimentelle Pathologie und Pharmakologie, 1874, II: 62-69.

STUHLMANN, J. and FALCK, C. P. Beiträge zur Kenntniss der Wirkungen des Kaffeins. Virchow's Archiv für pathologische Anatomie und Physiologie, 1857, XI: 324-383.

STENSTRÖM, THOR. Über die Coffeinhyperglykämie. Biochemische Zeitschrift, 1913, XLIX: 225-231

STERRETT, R. M. Coffee; a drug. Chicago Medical Times, Jan. 1910, XLIII.

THE TRUE "poison in the coffee cup." Medical Record, 1885, XXVII: 191.

UNTERSUCHUNG einer vermutheten Vergiftung durch Kaffee. Blätter für gerichtliche Anthropologie, 1862, XIII: 137-141.

WAENTIG, PERCY. Über den Gehalt des Kaffeegetränkes an Koffein und die Verfahren zu seiner Ermittelung. Arbeiten a. d. kaiserl. Gesundheitsamte, 1906, XXIII: 315-332.

WEDEMEYER, T. Habituation of the psychic functions to caffein. Arch., exp. Path. Phar., 1920, 85: 339-58.

WEISMANN. Ein Fall von schweren Vergiftungs erscheinungen durch einmaligen unmässigen Genuss von Kaffee. Zeitschrift für Bahn- und Bahnkassenärzte, 1906, I: 806.

ZENETZ. Dangers of caffeine. Pharmaceutical Journal, 1900, 4th ser., X: 333.

OF GREEN COFFEE

LANDARRAHILCO, O. Du café vert envisagé au point de vue de ses applications thérapeutiques dans le traitement de la goutte, de la gravelle, des coliques néphrétiques et de la migraine. *Montpellier*, 1866.

PERRET, E. Sur l'extrait physiologique de café vert. Bulletin général de Thérapeutique, 1910, CLX: 214-222.

SQUIBB. Fluid extract of green coffee. Ephemeris of materia medica, 1884, II: 616-619.

OF LEAVES OF COFFEE TREE

ON the dried coffee leaf of Sumatra. Pharmaceutical Journal, XIII: 207-209, 382-384.

OF ROASTED COFFEE

BURMANN, J. Recherches chimiques et physiologiques sur les principes nocifs du café torréfié. Bulletin général de Thérapeutique, 1913, CLXVI: 379-400.

GRINDEL. Fortgesetzte Erfahrungen über den rohen Caffee. Journal der practischen Arzneykunde und Wundarzneykunst, 1809, XXIX, pt. 12, 11-30.

OFFRET. Observations sur l'action physiologique du café, selon ses diverses torréfactions. *Nantes*, 1862.

OF SMOKING COFFEE

SCHMIDT. Ueber Caffee-Räucherung. Mitthellungen aus dem Gebiete der Medicin Chirurgie und Pharmacie, 1832, I: 217-220.

TRAVER, I.. Insanity from smoking coffee. Medical and Surgical Reporter, 1864-5, XII: 406.

ON CHILDREN

JACKSON, S. On the influence upon health of the introduction of tea and coffee in large proportion into the dietary of children and the labouring classes. American Medical Association. Trans-

actions, 1848, II: 635-644. *Also,* American Journal of Medical Science, 1849, n. s. XVIII: 79-86.

TAYLOR, C. K. Effects of coffee drinking on children Psychological Clinic, 1912-13, VI: 56-58.

WILLIAMS, T. A. A case of psychasthenia in a child aged two years, due to coffee drinking. Archives of Pediatrics, 1910, XXVII: 778-782. *Also,* Pacific Medical Journal, 1911, LIV: 221-225.

ON DIFFERENT ORGANS AND SYSTEMS

BLADDER

BECHER, CARL. Coffeïn als Herztonicum und Diureticum. Wiener Medizinische Blätter, 1884, VII, columns, 639-644.

BESSER. Die harnsäurevermehrende Wirkung des Kaffees und der Methylxanthin beim Normalen und Gichtkranken. Therapie der Gegenwart, 1909, n. s. XI: 321-327.

BONDZYŃSKI, ST., and GOTTLIEB, R. Über die Constitution des nach Coffeïn und Theobromin im Harne auftretenden Methylxanthins. Archiv für experimentelle Pathologie und Pharmakologie, 1896, XXXVII: 385-388.

DUMONT, A. Expériences relative à l'influence du café sur l'excrétion de l'urée urinaire. Revue médicale, 1888, VII: 257-260.

FAUVEL. Action du chocolat et du café sur l'excrétion urique. Comptes rendus de la Société de Biologie, 1908, LXIV: 854-856.

—Influence du chocolat et du café sur l'acide urique. Comptes rendus de l'Académie des Sciences, 1906, CXLII: 1428-1430; 1909, CXLVIII: 1541-1544.

FUBINI, S., and OTTOLENGHI. Influenza della caffeina e dell' infuso caffè sulla quantità giornaliera di urea emessa dall' uomo colle urine. Giornale della reale Accademia di Medicina di l'Orino, 1882, ser. 3, XXX: 570-574.

LOEWI, O. Ueber den Mechanismus der Coffeïndiurese. Archiv für experimentelle Pathologie und Pharmakologie, 1905, LIII: 15-32.

MENDEL, L. B. Caffein and uric acid. Tea and Coffee Trade Journal, 1917, XXXIII: 142-145.

ROST, E. C. Ueber die Ausscheidung des Coffeïn und Theobromin im Harn. Archiv für experimentelle Pathologie und Pharmakologie, 1895, XXXVI: 56-71.

ROUX, E. Des variations dans la quantité d'urée excrétée avec une alimentation normale et sous l'influence du thé et du café. Comptes rendus de l'Académie des Sciences, 1878, LXXVII: 865-867.

S., M. De l'emploi du café comme diurétique. Bulletin général de Thérapeutique, 1839, XVI: 144-148.

SCHITTENHELM, ALFRED. Zur Frage der harnsäurevermehrenden Wirkung von Kaffee und Tee und ihrer Bedeutung in der Gichttherapie. Therapeutische Monatshefte, 1910, XXIV: 113-116.

SCHROEDER, W. VON. Ueber die diuretische Wirkung des Coffeïns und der zu derselben Gruppe gehörenden Substanzen. Archiv für experimentelle Pathologie und Pharmakologie, 1887, XXIV: 85-108.

—Ueber die Wirkung des Coffeïns als Diureticum. Archiv für experimentelle Pathologie und Pharmakologie, 1887, XXII: 39-61.

WARDELL, EMMA L. Caffein and uric acid. Tea and Coffee Trade Journal, 1917, XXXIII: 142-145.

CIRCULATION, HEART, ETC.

ARCHANGELSKY, C. T. Die Wirkung des Destillats von Kaffee und von Thee auf Athmung und Herz. Archives internationales de Pharmacodynamie, 1900, VII: 405-424.

AUBERT, H., and DEHN, A. Ueber die Wirkungen des Kaffees, des Fleischextractes und der Kalisalze auf Hersthätigkeit und Blutdruck. Archiv für die gesammte Physiologie, 1874, IX: 115-155.

BECHER, CARL. Coffeïn als Herztonicum und Diureticum. Wiener Medizinische Blätter, 1884, VII, columns, 639-644.

BECO, LUCIEN, and PLUMIER, LÉON. Action cardiovasculaire de quelques dérivés xanthiques. Journal de Physiologie et Pathologie générale, 1906, VIII: 10-21.

BINZ, C. Die Wirkung des Destillats von Kaffee und Thee auf Athmung und Herz. Centralblatt für innere Medicin, 1900, XXI: 1169-1176.

BOCK, JOHANNES. Ueber die Wirkung des Coffeïns und des Theobromins auf das Herz. Archiv für experimentelle Pathologie und Pharmakologie, 1900, XLIII: 367-399.

COUTY, GUIMARAES, and NIOBEY. De l'action du café sur la composition du sang et les échanges nutritifs. Comptes rendus de l'Académie des Sciences, 1884, XCIX: 85-87.

CUSHNY, A. R., and VAN NATEN, B. K. On the action of caffeine on the mammalian heart. Archives internationales de Pharmacodynamie, 1901, IX: 169-180.

DUMAS, ADOLPHE. Bons effets de la caféine dans un cas de paralysie du cœur. *Paris,* 1886.

FREDERICQ, HENRI. L'excitabilité du vague cardiaque et ses modifications sous l'influence de la caféine. Archives internationales de Physiologie, 1913, XIII: 107-125.

FRENKEL, SOPHIE. Klinische Untersuchungen über die Wirkung von Coffeïn, Morphium, Atropin, Secale cormetum und Digitalis auf den arteriellen Blutdruck. Deutsches Archiv für klinische Medizin, 1890, XLVI: 542-582.

FÜRST. Die Gefahren des Kaffees bei Herz- und Arterien-leiden. Deutsche medicinische Presse, 1905, IX: 91.

HEDBOM, KARL. Ueber die Einwirkung verschiedener Stoffe auf das isolirte Säugethierherz. Skandinavisches Archiv für Physiologie, 1899, IX: 1-72.

HUCHARD, HENRI. De la caféine dans les affections du coeur. Bulletin général de Thérapeutique, 1882, CIII: 145-154.

LANDERGREN, E., and TIGERSTEDT, R. Studien über die Blutvertheilung im Körper. Skandinavisches Archiv für Physiologie, 1892-3, IV: 241-280.

LOEB, OSWALD. Ueber die Beeinflussung des Koronarkreislaufs durch einige Gifte. Archiv für experimentelle Pathologie und Pharmakologie, 1904, LI: 64-83.

MIRANO, G. C. L'azione della caffeina sulla pressione del pulso. La Riforma medica, 1906, XXI; No. 38. Reviewed in, Biochemisches Centralblatt, 1906-7, V: 205.

PACHON, V., and PERROT, E. Sur l'action cardiovasculaire du café vert, comparée à celle des doses correspondantes de cafeine. Comptes rendus de l'Académie des Sciences, 1910, CL: 1703-1705.

PHILLIPS, C. D. F., and BRADFORD, J. R. On the action of certain drugs on the circulation and

secretion of the kidney. Journal of Physiology, 1887, VIII: 117-132.

PILCHER, J. D. The action of caffeine on the mammalian heart. Journal of Pharmacology and Experimental Therapeutics, 1912, III: 609-624

RABE. The action of coronary vessels to drugs. Zeitschrift für experimentelle Pathologie, 1912, XI: 175.

REICHERT, E. T. Action de la caféine sur la circulation. Bulletin général de Thérapeutique, CXIX: 86. *Also* in English, Therapeutic Gazette, 1890, n. s. VI: 294.

SANTESSON, C. G. Einige Versuche über die Wirkung des Coffeïns auf das Herz des Kaninchens. Skandinavisches Archiv für Physiologie, 1901-2, XII: 259-296.

SOLLMANN, T., and PILCHER, J. D. The actions of caffeine on the mammalian circulation. Journal of Pharmacology and Experimental Therapeutics, 1911, III: 19-92.

TRZECIESKI, A. Ueber die Wirkung der Antipyretica auf das Herz. II. Ueber die Wirkung des Kaffeïns und Theobromins auf das Herz. Jahresbericht der Thierchemie, 1909, XXXIX: 1268.

VAN LEEUWEN, W. S. Quantitative pharmakologische Untersuchungen über die Reflexfunktionen des Ruckenmarkes an Warmblütern. Archiv für die gesammte physiologie, 1913, CLIV: 307-342.

VINCI, G. Azione della caffeina sulla pressione sanguigna. Archivo di Farmacologia e Terapeutica, 1895, 8. Reviewed, Revue des Sciences médicales, 1896, XLVII: 80.

DIGESTIVE ORGANS

BIKFALVI, KARL. Ueber die Einwirkung von Alcohol, Bier, Wein, Wasser von Borssik, schwarzem Kaffee, Tabak, Kochsalz und Alaun auf die Verdauung. Jahresbericht der Thierchemie, 1885, XV: 273.

BURIAN, RICHARD, and SCHUR, HEINRICH. Ueber die Stellung der Purinkörper im menschlichen Stoffwechsel. Archiv für die gesammte Physiologie, 1900, LXXX: 241-343.

CRÄMER. Ueber den Einfluss des Nikotins, des Kaffees und des Thees auf die Verdauung. Münchener medizinische Wochenschrift, 1907, LIV, pt. 1, 929-931, 988-991.

EDER, MAX. Studien über den Wert und die Wirkung des Kaffees auf die Tätigkeit der Wiederkäuermägen. Inaugural Dissertation, *Giessen*, 1912. 88 pp. Summarized, Zentralblatt für Biochemie und Biophysik, 1912, XIII: 504.

FARR, C. B., and WELKER, W. H. The effect of caffeine on nitrogenous excretion and partition. American Journal of the Medical Sciences, 1912, CXLIII: 411-415.

FILEHNE, WILHELM. Ueber einige Wirkungen des Xanthins, des Caffeïns und mehrerer mit ihnen verwandter Körper. Archiv für Anatomie und Physiologie, 1886, 72-91.

GOTTLIEB, R., and MAGNUS, R. Ueber die Beziehungen der Nierencirculation zur Diurese. Archiv für experimentelle Pathologie und Pharmakologie, 1901, XLV: 223-247.

GUIMARAES, E. A. R. De l'action du café sur la consommation d'aliments azotés et hydrocarbonés. Comptes rendus de la Société de Biologie, 1883, ser. 7, V: 590-592.

GUIMARAES, E. A. R., and NIOBEY. De l'action du café sur la nutrition et sur la composition du sang. Comptes rendus de la Société de Biologie, 1888, ser. 7, IV: 546-550. *Also*, Comptes rendus de l'Académie de Sciences, 1884, XCIV: 85-87.

HALE, WORTH. Influence of certain drugs upon the toxicity of acetanilide and antipyrine. Public Health and Marine-Hospital Service of the U. S. Hygienic Laboratory. Bulletin, No. 53, p. 43, Experiments with caffeine citrate.

HEERLEIN, W. Das Coffeïn und das Kaffeedestillat in ihrer Beziehung zum Stoffwechsel. Archiv für die gesammte Physiologie, 1892, LII: 165-185.

KOTAKE, Y. Ueber den Abbau des Coffeïns durch den Auszug aus der Rinderleber. Zeitschrift für physologische Chemie, 1908, LVII: 378-381.

LIWSCHITZ, O. Ueber den Einfluss des Kaffees auf den Eiweis-stoffwechsel beim Menschen. *Basel*, 1914.

MARCHAND, EUGENE. Le café du lait est une soupe au cuir. Revue de Thérapeutique médico-chirurgicale, 1873, 261.

NAGEL. Die Wirkung des Café's auf eingeklemmte Darmparthien. Allgemeiner Wiener medizinische Zeitung, 1872, XVII: 391.

NAGASAKI, S., and MATSWUOKA, Z. Ueber den Abbau des Kaffeïns und Theobromins durch den Rinderpankreas und Stierhodenauszug. Kyoto Igaku-zashi, 1912, IX; H. 3. Summarized, Zentralblatt für Biochemie und Biochemie und Biophysik, 1912-13, XIV: 743.

OGÁTA, MASANORI. Ueber den Einfluss der Genussmittel und Magenverdauung. Archiv für Hygiene, 1885, III: 204-214.

PAWLOWSKY, I. Ueber den Einfluss von Tee, Kaffee und einigen alkoholischen Getränken auf die quantitative Pepsinwirkung. Jahresbericht der Thierchemie, 1903, XXXIII: 543.

PINCUSSOHN, LUDWIG. Die Wirkung des Kaffees und des Kakaos auf die Magansaftsekretion. Münchener medizinische Wochenschrift, 1906, LIII, pt. I, 1248-1249.

—Ueber das sekretionsfordernde Prinzip des Kaffees. Zeitschrift für physikalische und diätetische Therapie, 1907, XI: 261-263.

RABUTEAU. Recherches sur l'action des caféiques sur la nutrition. Gazette médicale de Paris, 1870, XXV: 593. *Also*, Comptes rendus de la Société de Biologie, 1872, ser. 5, II: 77-81.

RIBAUT, H. Influence de la caféine sur l'excrétion azotée. Comptes rendus de la Société de Biologie, 1901, LIII, (ser. 2, III): 393-395.

SASAKI, TAKAOKI. Experimentelle Untersuchungen über den Einfluss des Tees auf die Magensaftsekretion. Berliner klinische Wochenschrift, 1905, XLII: 1526-1528.

SCHMIEDEBERG, OSWALD. Vergleichende Untersuchungen über die pharmakologischen Wirkungen einiger Purinderivate. Berichte der deutschen chemischen Gesellschaft, 1901, XXXIV, No. 395, 2550-2559.

SCHULTZ-SCHULTZENSTEIN, C. Versuche über den Einfluss van Caffee- und Thee- Abkochungen auf künstliche Verdauung. Zeitschrift für physiologische Chemie, 1893-4, XVIII: 131.

STORY, W. Coffee as an absorbent. Lancet, 1873, II: 617.

TOGAMI, K. Ueber den Einfluss einiger Genussmittel auf die Wirksamkeit der Verdauungsenzyme. Biochemisches Zeitschrift, 1908, IX: 453-462.

TYRODE, M. V. Caffeine on the gastro-intestinal tract. Boston Medical and Surgical Journal, 1911, CLXIV: 686.

EYES AND EARS

BULSON, A. E. Coffee amblyopia. American Journal of Ophthalmology, 1905, XXII: 55-64.

CROTHERS, T. D. Effects of coffee upon the eyes and ears. In his, Disease of inebriety from alcohol, opium and other narcotic drugs, *New York*, 1893. p. 309.

FRENCH, H. C. Coffee drinking and blindness. North American Review, 1888, CXLVII:584-585.

HOLADAY, J. M. Coffee-drinking and blindness. North American Review, CXLVII: 302.

WING, P. B. Report of a case of toxic amblyopia from coffee. Annals of Ophthalmology, 1903, XII: 232-234.

LACTATION

FRANKL, J. Ueber die Anwendung von Kaffee bei den Krankheiten der Säuglinge. Wiener medizinische Wochenschrift, 1872, XXII: 384.

OBIDENNIKOFF, E. O vlijanii kofe na kolichestvo i kolichestven sostave moloka. (Influence of coffee on lactation). *St. Petersburg*, 1871.

MUSCULAR SYSTEM

BENEDICENTI, A. Ergographische Untersuchungen über Kaffee, Thee, Maté, Guarana und Coca. Moleschott's Untersuchungen zur Naturlehre, 1899, XVI: 170-186.

BUCHHEIM and EISENMENGER. Ueber den Einfluss einiger Gifte auf die Zuckungscurve des Froschmuskels. III. Caffeïn. Beiträge zur Anatomie und Physiologie, 1870, V: 113-118.

DESTRÉE, E. Effets immédiats et tardifs de la caféine sur le travail. Journal médical de Bruxelles, 1897, II: 231, 577.

DRESER, H. Ueber die Messung der durch pharmakologische Agentien Bedingten Veränderungen der Arbeitsgrösse und der Elasticitatszustände des Skeletsmuskels. Archiv für experimentelle Pathologie und Physiologie, 1904, XVI: 139-221.

KOBERT, E. R. Ueber den Einfluss verschiedener pharmakologischer Agentien auf die Muskelsubstanz. Archiv für experimentelle Pathologie und Pharmakologie, 1882, XV: 22-79.

LUSINI, V. Biologische und toxische Wirkung der methylirten Xanthine insbesondere ihr Einfluss auf die Muskelermüdung. L'Orosi, XXI: 257-263.

MOSSO, UGOLINO. Action des principes actifs de la noix de kola sur la contraction musculaire. Archives italiennes de Biologie, 1893, XIX: 241-256.

OSERETZKOWSKY, A., and KRAEPELIN, E. Ueber die Beeinflussung der Muskelleistung durch verschiedene Arbeitsbedingungen. V. Der Einfluss von Alkohol un Coffeïn. Psychologische Arbeiten, 1901, III: 617-643.

PASCHKES, H., and PAL, J. Ueber die Muskelwirkung des Coffeins, Theobromins und Xanthins. Wiener medizinische Jahrbücher, 1886, 611-617.

RANSOM, F. The action of caffeine on muscle. Journal of Physiology, 1911, XLII: 144-155.

RIVERS, W. H. R., and WEBBER, H. N. The action of caffein on the capacity for muscular work. Journal of Physiology, 1907-8, XXXVI: 33-47.

ROSSI, CESARE. Ricerche sperimentali sulla fatica dei muscoli umani. Caffeina. Rivista sperimentale di Freniartria, 1894, XX: 458-462.

SACKUR. Ueber die todliche Nachwirkung der durch Kaffein erzengten Muskelstarre. Virchow's Archiv für pathologische Anatomie und Physiologie, 1895, CXLI: 479-484.

SCHUMBERG. Ueber die Bedeutung von Kola, Kaffee, Thee, Maté und Alkohol für die Leistung der Muskeln. Archiv für Anatomie und Physiologie, 1899, 289-813.

SOBIERAŃSKI, W. Ueber den Einfluss der pharmakologischen Mittel auf die Muskelkraft der Menschen. Gazeta lekarska, 1896. Summarized, Centralblatt für Physiologie, 1896, X: 126.

WOOD, H. C. The effects of caffeine on the circulatory and muscular systems. Therapeutic Gazette, 1912, XXXVI, (ser. 3, XXVIII): 6-13.

NERVOUS SYSTEM, BRAIN, ETC.

ACH, NARZISS. Ueber die Beeinflussung der Auffossungsfähigkeit. Psychologische Arbeiten, 1901, III: 203-289.

DEHIO, HEINRICH. Untersuchungen über den Einfluss des Coffeïns und Thees auf die Dauer einfacher psychischer Vorgänge. Inaugural dissertation, *Dorpat*, 1887. 55 pp.

DIETH, M. J., and VINTSCHGAU, M. VON. Das Verhakten der physiologischen Reactionzeit unter dem Einfluss von Morphium, Caffée und Wein. Archiv für gesammte Physiologie, 1878, XVI: 316-406.

DIXON, W. E. The paralysis of nerve cells and nerve endings with special reference to the alkaloid apocodeine. Journal of Physiology, 1904, XXX: 97-131.

HOCH, AUGUST, and KRAEPELIN, E. Ueber die Wirkung der Theebestandtheile auf körperliche und geistige Arbeit. Psychologische Arbeiten, 1896, I: 378-488.

HOLLINGWORTH, H. L. Influence of caffein on mental and motor efficiency. Archives of Psychology, 1912, XXII: 166. *Also*, Therapeutic Gazette, 1912, XXXVI: 1.

HOPPE, I. Des effets de la cofféine sur le système nerveux des animaux. L'Écho médical, 1858, II: 449-460.

KIONKA, H. (Caffein and coffee as nerve poisons.) Grundriss der Toxicologie, 1901: 331-336.

LE GRAND, DU SAULLE. De l'insalubrité de l'atmosphère des cafés et de son influence sur le développement des maladies cérébrales. Gazette des Hôpitaux, 1861; *also* Academie des Sciences, 1861.

LESZYNSKY, W. M. Coffee as a beverage and its frequent deleterious effects upon the nervous system; acute and chronic coffee poisoning. Medical Record, 1901, LIX: 41-44.

MCMAKIN, A. L. Influence of coffee on brain workers. Good Housekeeping, 1912, LIV: 381-382.

PALDANUS. Ein Paar Worte über Kaffee als Fiebermittel und Medikament überhaupt. Neues Archiv für medizinische Erfahrung, 1809, XI: 318-822.

PETIT, H. De l'emploi préventif et curatif du café, notamment dans les congestions cérébrales. Gazette des Hôpitaux, 1862, XXXV: 446.

DE SARLO, F., and BERNARDINI, C. Ricerche sulla circolazione cerebrale. I. Ischemizzanti. Caffeici. Rivista sperimentale di Freniatria, 1892, XVIII: 8-14.

SWIRSKI, G. Ueber die Beeinflussung des Vaguscentrums durch das Coffeïn. Archiv für gesammte Physiologie, 1904, CIV: 260-292.

WILLIAMS, T. A. Coffee and the nervous system. Medical Summary, 1912.

RESPIRATION

ARCHAŃGELSKY, C. T. Die Wirkung des Destillats von Kaffee und von Thee auf Athmung und Herz.

Archives internationales de Pharmacodynamie, 1900, VII: 405–424.

BINZ, C. Die Wirkung des Destillats von Kaffee und Thee auf Athmung und Herz. Centralblatt für innere Medicin, 1900, XXI: 1169–1176.

CUSHNY, A. R. The action of drugs on the respiration. Proceedings of the Royal Society of Medicine, 1912-3, VI, pt. 3: 130.

EDSALL, D. L., and MEANS, J. H. The effect of strychnine, caffeine, atropin and camphor on the respiratory metabolism in normal human subjects. Archives of Internal Medicine, 1914, XIV: 897–910.

LEHMANN, K. B., and ROHRER, G. Besitzen die flüchtigen Bestandteile von Thee und Kaffee eine Wirkung auf die Respiration des Menschen? Archiv für Hygiene, 1902, XLIV: 203.

SÉE, G., and LAPICQUE. Action de la caféine sur les fonctions motrices et respiratoires, à l'état normal et à l'état d'inanition. La Médicine moderne, 1890, I: 228–234.

SUBSTITUTES

General

BIBRA, Baron VON. Der kaffee und seine surrogate. *Munich*, 1858.

CHRIST, J. L. Der neueste und beste deutsche Stellvertretter des indischen Caffe oder der Coffee von Erdmandeln; zu Ersparung vieler Millionen Geldes für Deutschland und längeren Gesundheit Tausender von Menschen. 2 ed. *Frankfurt-am Mayn*, 1801.

FRANKE, ERWIN. Kaffee, Kaffeekonserven und Kaffeesurrogate. *Wien*, 1907. 221 pp.

FREEMAN, W. G. and CHANDLER, S. E. Coffee and coffee substitutes. In their, The world's commercial products. *London*, 1907. pp. 174–198.

GERSTER, C. Kaffee und Kaffee-Surrogate. In ihrer, Bedeutung für den praktischen Arzt. *Berlin*, 1894.

GUNDRIZER, R. F. O surrogatïe kofe, prigotovlyayemom iz sïemyan sinyavo lyupina (Lupinus angustifolius L.) (On a substitute for coffee, from the seeds of . . .) *St. Petersburg*, 1892.

LEHMANN, K. Die Fabrikation des Surrogat kaffees und des Tafelsenses. *Wien*, 1877. 128 pp.

LOCHNER, N. F. De novis et exoticis Thée et Café succédanéis. *Noribergae*, 1717.

MENIER, E. J. Café: succédanés du café, cacao et chocolat, coca et thé maté. *Paris*, 1867. 24 pp. (Jury report, Exposition Universelle de 1867, à Paris.)

TRILLICH, HEINRICH. Die kaffee surrogate. *Munchen*, 1889.

WEICHARDT, T. T. Succedaneorum coffeae inveniendorum regulas proponit. *Lipsiae*, 1774.

Periodicals

ACORN coffee. Pharmaceutical Journal, 1876, p. 772.

BASCH, ALBERT. Rapport sur le café de figue. Société de Géographie d'Alger et de l'Afrique du Nord. Bulletin, 1901, VI: 604–607.

BOULLIER, G. De la préparation de la soupe destinée à remplacer le café au réveil. Archives de médecine et de Pharmacie militaires, 1903, XLI: 465–473.

BRILL, HARVEY C. Ipel, a coffee substitute. The Tea and Coffee Trade Journal, 1918, XXXV: 628-630.

DERIDDER, H. Sur un succédané du café. Archives médicales belges, 1896, 4 ser. VIII: 237-241.

DUCHACEK, F. Beiträge zur Kenntniss der chemischen Zusammensetzung des Kaffees und der Kaffee-Ersatztoffe. Zeitschrift für Untersuchung der Nahrungs- und Genussmittel, 1904, VIII: 139–146.

FABER, E. E. Om kaffee, kaffesurrogater og koffeïnfri kaffe. Ugeskrift for Laeger, 1909, LXXI: 841–847.

GRÄF, H. Ein neues Kaffee-Ersatzmittel. Deutsche medicinische Presse, 1907, XI: 65–67.

GUILLOT, C. Étude comparative sommaire des principaux produits de substitution du café. Gazette médicale de Paris, 1912, LXXXIII: 125.

HANAUSEK, T. F. Einige Bermerkungen zu den Kapiteln Kaffee und Kaffee-Ersatzstoffe in den Vereinbarungen. Apotheker - Zeitung, 1902, XVII: 657.

HANBURY, DANIEL. On the use of coffee leaves in Sumatra. Pharmaceutical Journal, 1853, XIII: 207–209.

KORNAUTH, C. Beiträge zur chemischen und mikroskopischen Untersuchung des Kaffee und der Kaffeesurrogate. Mittheilungen aus dem pharmaceutischen Institute und Laboratorium für angewandte Chemie der Universität Erlangen, 1890, III: 1–56.

KOTSIN, M. B. Kofe i yevo surrogati. (Coffee and its substitutes.) Vestnik obshestvennoi higieny, sudebnoi i prakticheskoi meditsiny, etc., 1894, XXIII: pt. 2. 86, 156, 226.

NICOLAI, H. F. Der Kaffee und seine Ersatzmittel. Deutsche Vierteljahrsschrift für öffentliche Gesundheitspflege, 1901, XXXIII: 294–346, 502–538.

NOTTBOHM, F. E. Verwendung von Steinnuss zur Herstellung von Kaffeersatzmitteln. Zeitschrift für Untersuchung der Nahrungs- und Genussmittel, 1913, XXV: pt. 3.

OELLER and GERLACH, VON. Ueber die Einwirkung von Gerstenkaffee und Malzkaffee auf das Sehorgen. Therapeutische Monatshefte, 1912, XXVI: 429–431.

RAMPOLD. Ueber Kaffeesurrogate. Journal der practischen Heilkunde, 1838, LXXXVII: pt. 4, 94–109.

RUEDY, J. Thee und Kaffee, deren Surrogate und Fälschungen. Blätter für Gesundheitspflege, 1876, V: 183, 195, 203; 1877, VI: 19, 32, 42, 53.

SALE of dandelion coffee. Pharmaceutical Journal, 1860, II: 346–348, 357–358, 396.

STENHOUSE, J. On the dried coffee leaf of Sumatra, which is employed in that and some of the adjacent islands as a substitute for tea or for the coffee bean. Pharmaceutical Journal, 1854, XIII: 382–384.

TRILLICH, H. and GOCKEL, H. Beiträge zur Kenntniss des Kaffees und der Kaffeesurrogate. Zeitschrift für Untersuchung der Nahrungs- und Genussmittel, 1898, V: 101–106. *Also*, Forschungs-Berichte über Lebensmittel, 1897, IV: 78; 1898, V: 101.

WEISSMAN. Ueber Kornkaffee. Deutsche medizinische Wochenschrift, 1903, XXIX: 20.

WOODS, C. D. and MERRILL, L. H. Coffee substitutes. Maine Agricultural Experiment Station. Bulletin, LXV: 101-116.

Malt Coffee

DOEPMANN, F. Ueber Malzkaffee. Zeitschrift für Untersuchung der Nahrungs- und Genussmittel, 1914, XXVII: 453–466.

JUNGHAHN, A. Beiträge sur Chemie und Technologie des Malzkaffees. Verhandlung der Gesellschaft deutscher Naturforscher und Aerzte, 1906, II, pt. 2, 382–386.

TRILLICH, H. Welche Mindestforderungen sind an Malz für Malzkaffee zu stellen? Zeitschrift für Untersuchung der Nahrungs- und Genussmittel, 1905, X: 118–121.

TAXATION, JURISPRUDENCE, ETC.

BORDEAUX. CHAMBRE DE COMMERCE. Rapport fait à la Chambre par la Commission spéciale chargée d'étudier la question de la reduction des droits sur les sucres et les cafés. *Bordeaux*, 1858. 27 pp.

—Second rapport fait à la Chambre par la Commission spéciale chargée d'étudier la question de la réduction des droits sur les sucres et les cafés. *Bordeaux*. 1859. 16 pp.

CORRIE, EDGAR. Letters on the subject of the duties on coffee. *London*, 1808. 61 pp.

GREAT BRITAIN. STATUTES. Anno regni Georgii III. Regis Quadragesimo nono. Cap. lxi. An act for making sugar and coffee of Martinique and Mariegalante liable to duty on importation as sugar and coffee not of the British plantations. *London*, 1809: pp. 437–438.

—Anno regni Georgii II Regis vicesimo quinto. An act for encouraging the growth of coffee in His Majesty's plantations in America. *London*, 1752: pp. 723–734.

—Anno regni Georgii II Regis quinto. An act for encouraging the growth of coffee in His Majesty's plantations in America. *London*, 1732: pp. 411–415.

LARRINAGA, TULIO. Brief of Honorable Tulio Larrinaga, resident commissioner from Porto Rico to the United States of America before the Committee on ways and means. *Washington*, 1908. 9 pp.

MADRAS. STATUTES. The Madras coffee-stealing prevention act, 1878. *Madras*, 1908. 9 pp.

NELSON, KNUTE. Export duty on coffee and tea. List of countries levying an export duty on coffee and tea, with statistics from the annual report on commerce and navigation for 1908. *Washington*, 1909. 6 pp. U. S. 61st Congress, 1st session. Senate Document, 120.

ORDONNANTIE, waar naar in de stad Utrecht en Amersfoort, en in de vryheden van dien, by taxatie zal worden geheven de impost op de koffy, cicers en thee. *Utrecht*, 1767. 6 pp.

PRODUCE CLEARING HOUSE. Regulations for coffee future delivery. *London*, 1888. 12 pp.

VAN OOSTERWIJK BRUYN, PIETER ADOLF. Beschouwingen over eene belasting op koffij. *Utrecht*, 1863. 78 pp.

TRADE AND STATISTICS

EXCHANGE TABLES

MÜLLER, VICTOR R. Comparative tables showing the parity of prices of Havre good average and New York coffee exchange standard no. 7. *New York*, 1887. 15 pp.

SELIGSBERG, LOUIS. Parity tables for quotations of coffee and sugar on the various exchanges of Europe, converted into American currency. *New York*, 1891. 28 pp.

ZOBEL, PAUL. Paritäts-Tabellen zum Kaffee-Termin-Markt nebst Schnellrechunungs Tabellen, 1907. *Triest*.

GENERAL

BELLI, B. Il caffè, il suo paese e la sua importanza. *Milano*, 1910. 395 pp.

BIZIO, G. Il caffè. Le ioni date dal Prof. G. Bizio alla Reale Scuola superiore di commercio, *Venezia*, 1870.

BROUGIER, A. Der Kaffee, dessen Kultur und Handel, 1897.

BURNS, JABEZ. The "Spice mill" companion: a collection of valuable information, original and selected, suited to the requirements of the present condition of the coffee and spice mill business. *New York*, 1879. 102 pp.

DOWLER, J. S. O. & Co. Coffee calculator. *Saint Louis*, 1907. 31 pp.

FERGUSON, J. Production of tea and coffee in British dependencies. *London*, 1896. 1 p.

FÜRST, MAX. Die Börse, ihre Enstehung und Entwicklung, ihre Einrichtung und ihre Geschäfte. Die Welthandelsgüter Getreide, Kaffee, Zucker. *Leipzig*, 1913.

INTERNATIONAL BUREAU OF THE AMERICAN REPUBLICS. Coffee. Extensive information and statistics. *Washington*, 1901. 108 pp. *Also*, in Spanish.

—Coffee. Reprint of an article from the Monthly Bulletin of the International Bureau of American Republics, Nov. 1908. *Washington*, 1909. 11 pp.

INTERNATIONAL INSTITUTE OF AGRICULTURE. BUREAU OF STATISTICS. Stocks visibles de froment et farine de froment, de sucre, de café, de coton et de soie; 1903-12. *Rome*, 1914. 79 pp.

SCHMEDDING, J. H. F. and ZONEN. Coffee. Statistics running from 1884-1905. *Amsterdam*, 1901. 18 pp.

SCHÖFFER, C. H. The coffee trade. *New York*, 1869. 58 pp.

UNITED STATES. BUREAU OF FOREIGN COMMERCE. Verslagen betreffende de cultuur en de bereiding van koffie en het keplante en nog beschikbare terrein voor dit product in Mexico, Centraal- & Zuid-America en West-Indië. *Amsterdam*, 1889. 135 pp. In English, except introduction. Reprinted from Reports from the consuls of the United States, 1888, XXVIII, No. 98.

UNITED STATES. STATISTICS BUREAU. The world's production and consumption of coffee, tea and cacao in 1905. *Washington*, 1905. 206 pp. Reprinted from Monthly Summary of Commerce and Finance, July, 1905.

VAN DELDEN LAERNE, C. F. Brazil and Java. Report on coffee-culture in America, Asia and Africa, to H. E. the Minister of the Colonies. *London*, 1885. 687 pp.

Periodicals

BACHE, L. S. How the exchange works. The Tea and Coffee Trade Journal, 1921, XLI:678-682.

BRAND, CARL W. Co-operative competition. The Tea and Coffee Trade Journal, 1914, XXVII: 534-540.

CALVO, J. B., and DELFINO, A. E. Commission for the study of the production, distribution and consumption of coffee. International Bureau of American Republics Monthly Bulletin, 1902, XIII: 1317–1321.

COFFEE. Statist, 1915, LXXXIII: 877–878.

COFFEE and coffee trade. Hunt's Merchant's Magazine, XXVII: 39; XLI: 165.

COFFEE trade. Leisure Hour, XXIX:357.

COTTON-COFFEE quotation record. Monthly. *N. Y.*

CRAWFORD, J. History of coffee. Journal of the Statistical Society, XV: 50.

DUKE, J. S. Coffee trade. De Bow's Commercial Review, II: 303. Hunt's Merchant's Magazine, 1850, XXIII: 59, 172, 451.

EL CAFETAL, revista oficial mensuel dedicada exclusivamente a la industria cafetera en todos su ramos. *New York,* 1903.

FEDERAL REPORTER, for planters, grocers, confectioners, canners and dealers in coffee, tea and spice. *New York.* Current monthly.

GARDNER, J. Coffee trade. Western Journal and Civilian, VII: 301. *Also,* Hunt's Merchant's Magazine, XIII: 273; J. Gardner Hunt's Merchant's Magazine, XXV: 690; Living Age, XXVII: 254.

—Production and consumption of coffee. Hunt's Merchant's Magazine XXIV: 194.

GILL, W. K. Meeting coffee competition. The Tea and Coffee Trade Journal, 1916, XXXI:238-239.

GRAHAM, HARRY CRUSEN. Coffee. Production, trade, and consumption by countries. U. S. Dept. of Agriculture. Bureau of Statistics. Bulletin, 1912, LXXIX. 184 pp.

GREAT BRITAIN. COMMERCIAL, LABOUR AND STATISTICAL DEPT. Tea and coffee. Statement "showing the imports of tea and coffee into the principal countries of Europe and into the United States: together with statistical tables relating thereto for recent years as far as the particulars can be stated." 1884-1900. House of Commons, paper 351, 1900. 27 pp. House of Commons paper 363, 1902. 42 pp.

HANGWITZ, JULIAN. The world's coffee trade in 1898. Consular Reports, 1899, LX: 258-261.

HARRIS, WILLIAM B. Coffee and the law. Tea and Coffee Trade Journal, 1912, XXIII; Supplement to No. 6: 41-44.

HEILPRIN, M. History of coffee. Nation, VI: 275.

HUEBNER, G. G. Coffee market. Annals of the American Academy, 1911, XXXVIII: 610–620.

INTERNATIONAL BUREAU OF THE AMERICAN REPUBLICS. Bulletin. Washington, 1893—date. Contains from time to time articles on coffee production in the various Latin-American countries.

KAFFEE verbrauch in den haupt sächlichsten LÄndern der Welt. Deutsche Handels-Archiv, 1901, 206–207.

LECOMTE, H. La culture du café dans le monde. La Géographie, 1901, III: 471–488. *Also,* in Finnish, Geografiska Föreningens Tidskr., 1901, XIII: 252–272.

LEECH, C. J., & Co. Table of coffee statistics. Annual. *London.*

LEHY, GEOFFREY B. Coffee distribution. The Tea and Coffee Trade Journal, 1918, XXV:564-566.

LEWIS, E. ST. ELMO. Promoting coffee sales. The Tea and Coffee Trade Journal, 1915, XXIX:539-544.

MAHIN, JOHN LEE. Advertising coffee. The Tea and Coffee Trade Journal, 1912, XXIII:56-58.

MATHEWS, FREDERICK C. Coffee advertising efficiency. The Tea and Coffee Trade Journal, 1912, XXIII:38-40.

MCCREERY, R. W. The penny-change system. The Tea and Coffee Trade Journal, 1911, XXI:462-464.

MACFARLANE, JOHN J. Coffee and tea statistics. The Tea and Coffee Trade Journal, 1916, XXXI: 329-333.

MERRITT, E. A. The world's coffee. U. S. Consul's report on commerce, 1883, No. 31, 125-147.

NEW YORK. COFFEE EXCHANGE. Report. Annual. *New York.*

OUR coffee industry. Scientific American Supplement, 1902, LIII: 21994.

PRICE, import, and consumption of coffee. De Bow's Commercial Review, XX: 253.

SIMMONS' SPICE MILL; devoted to the interests of the coffee, tea and spice trades. Monthly. *New York.*

TEA and coffee consumption. Current Literature, 1901, XXX: 298.

TEA AND COFFEE TRADE JOURNAL, THE. For the tea, coffee, spice and fine grocery trades. Monthly. New York.

UKERS, WILLIAM H. Advertising Brazil coffee. Tea and Coffee Trade Journal, 1917, XXXII: 84–86.

—The right coffee propaganda. Tea and Coffee Trade Journal, 1912, XXIII. Supplement to No. 6: 21-28.

UKERS, WILLIAM H., editor. Tea and coffee buyer's guide. Annual. *New York.*

UNITED STATES. STATE DEPARTMENT. Production and consumption of coffee, etc. Message from the president of the United States, transmitting a report from the secretary of state, with accompanying papers, relative to the proceedings of the International Congress for the Study of the Production and Consumption of Coffee, etc. Dec. 10, 1902. U. S. 57th Congress, 2nd session. Senate document 35. 312 pp.

VASCO, G. Le café. Revue française de l'étranger et des colonies et exploration, 1900, XXV: 598-603.

WEIR, ROSS W. Coffee hints for grocers. The Tea and Coffee Trade Journal, 1913, XXV:566-568.

WESTERFELD, SOL. Retailers' coffee problems. The Tea and Coffee Trade Journal, 1917, XXXIII: 559-560.

WORLD'S coffee trade. The Tea and Coffee Trade Journal, 1919, XXXVI:129-130.

REGIONAL

BRAZIL

ALVES DE LIMA, J. C. Solugões sobre o commercio de café. *São Paulo,* 1902. 88 pp.

BOLLE, KARL. São Paulo das bedeutendste Kaffeegebeit der Welt. Deutsche Rundschau für Geographie, XXVIII: 66-77.

BRAZIL. MINISTERIO DE FAZENDA. Direitos de exportação e sua cobranca. *Rio de Janeiro,* 1895. 11 pp.

BRAZIL. SERVIÇO DE ESTATISTICA COMMERCIAL. Statistics of imports and exports. The movement of shipping, exchange and coffee in the republic of the United States of Brazil. (Yearly.) *Rio de Janeiro.*

BRAZIL and coffee; souvenir of the Louisiana purchase exposition. 1904. 28 pp.

BRAZIL coffee in England. Bulletin of the Pan American Union, 1915, XL: 514–515.

BRAZILIAN coffee propaganda, The. Commercial and Financial Chronicle, 1909, LXXXVIII: 1223–1224.

BRAZILIAN REVIEW, The: a weekly record of trade and finance. *Rio de Janeiro,* 1907–1914.

COFFEE crop of Brazil, The. Economist, 1909, LXVIII: 1030–1031.

COFFEE exports from Brazil, 1898–1900. Monthly Summary of Commerce and Finance, 1900-1901: 2592–2593.

D'ANTHOUARD DE WASSERVAS, A. Le café au Brésil. Journal des Économistes, 1910, ser. 6, XXVII: 16–37.

DA SILVA TELLES, A. E. O café e o estado de S. Paulo. *São Paulo,* 1900. 60 pp.

EMPIRE of Brazil at the World's industrial and cotton centennial exposition of New Orleans, The. *New York,* 1885. 71 pp.

GREAT BRITAIN. FOREIGN OFFICE. BRAZIL. Résumé of a report published in the "Journal do Commercio" of Rio de Janeiro on the production of coffee in Brazil, with statistics respecting its consumption in the United States. *London,* 1899. 7 pp. Diplomatic and Consular Reports, Miscellaneous series, No. 512.

GROSSI, VINCENZO. La crisi del caffè e i progetti per la fissazione del cambio al Brasile. Nuova Antologia, CCVIII; (ser. 5, CXXIV): 484-494.

KAFFEEFRAGE in Brasilien, Die. Grenzboten, LXVI: 335-339.

LEROY-BEAULIEU, PAUL. Les droits sur le café. Le Brésil, la France et nos colonies. L'Économiste français, XXVIII; no. 1: 101-103.

MOREIRA, NICOLAU JOAQUIM. Brazilian coffee. *New York,* 1876. 11 pp.

N. Lettres du Brésil. La question du café. L'Économiste francais, XXVIII, No. 1: 374-377.

PATTERSON, W. MORRISON. Brazil's coffee trade of to-day. The Tea and Coffee Trade Journal, 1918, XXXV:323-324.

PINTO, ADOLPHO AUGUSTO. The state of São Paulo. *Chicago,* 1893. 14 pp.

SÃO PAULO (*state*) BRAZIL. SECRETARIA DE COMMERCIO SE OBRAS PUBLICAS. Estatistica especial da lavoura de café nos municipios de Aracariguama, Atibaia, Bananal, Pilar, Sertãozinho e Redempção. *São Paulo.* 1900. 33 pp. Supplemento do Boletin da Agricultura, 1900, ser. 1: VI.

—Estatistica especial da lavoura de café nos municipios de Apiahy, Batates. Caconde, Campos Novos do Paranapanema, Dourado, Fartura, Faxina, Itarare, Jaboticabal, Mocóca, Monte-Mór, Natividade, Nazareth, Pirassununga, Porto-Feliz. Remedios da Ponte do Tieté, São Pedro do Turvo. Sarapuhy, Serra Negra e Yporanga. *São Paulo,* 1901. 177 pp. Supplemento do Boletin da Agricultura, 1901, ser. 2: IV.

SEEGER, EUGENE. Coffee crop of Brazil. U. S. Consular Reports, 1898, LVII, No. 218: 334-336.

TRANSPORTING Brazil coffee. Tea and Coffee Trade Journal, 1917, XXXII: 214–224.

WARD, ROBERT DE C. A visit to the Brazilian coffee country. National Geographic Magazine, 1911, XXII: 908–931.

WILLIAMS, J. H. The Brazil coffee situation. The Tea and Coffee Trade Journal, 1918, XXXV:221-222.

WINDEIS, J. H. A coffee buyer's life in Brazil. Tea and Coffee Trade Journal, 1916, XXX: 538–545.

COLOMBIA

DICKSON, SPENCER S. Colombia. Report on the coffee trade of Colombia. *London,* 1903. 8 pp. Great Britain. Foreign Office. Diplomatic and Consular Reports, Miscellaneous series, No. 598.

COSTA RICA

COSTA RICA. CONTABILIDAD NACIONAL. Exportacion de la cosecha de café.

COSTA RICA. DEPARTMENTO NACIONAL DE ESTADISTICA. Diagrams de los promedios obtenidos en la venta del café de Costa Rica en Londres en los años de 1890 a 1899. *San José,* 1900.

—Exportaciones de café de la República de Costa Rica. *San José,* 1900. 14 pp. Alcance á La Gaceta, 1900, No. 99.

—Fluctuaciones de los precios del café en Hamburgo, 1880-1899. *San José,* 1900.

COSTA RICA. SECRETARIA DE RELACIONES EXTERIORES. Estudio é informe sobre el café de Costa Rica. 1900. 48 pp.

EAST INDIES

DEKKER, EDUARD DOUWES. Max Havelaar; or The coffee auctions of the Dutch Trading Company; by Multaluli, (pseud.); trans. from the original ms. by Baron Alphonse Nahuijs. *Edinburgh,* 1868.

VERWANGING van de gedwongen koffieteelt door eene vrije volkskoffiecultuur. Tijdschrift voor Nederlandsch-Indie new ser. 2, V: 252-261.

FINLAND

GRANROTH, ELIAS G. Om cafe och de inhemska wäxter, som pläga brukas i dess ställe. *Abo,* 1755. 18 pp.

FRANCE

ARREST DU CONSEIL D'ESTAT DU ROY, qui permet aux directeurs interessez en l'armement du vaisseaux la Paix, de vendre les balles de caffé dont il est chargé. *Paris,* 1720. 4 pp.

—Qui accorde à la Compagnie des Indes le privilege exclusif de la vente du caffé. *Paris,* 1723. 4 pp.

—Pour la prise de possession par la Compagnie des Indes du privilege de la vente exclusive du caffé, sous le nom de Pierre le Sueur. *Paris,* 1723. 7 pp.

—Qui ordonne que les commis et employez de la Compagnie des Indes pour l'exploitation des privileges du tabac et du café, procederont aux visites et executions au sujet des toiles et etoffes des Indes et du Levant. *Paris,* 1723. 7 pp.

—Que declare commune en faveur des habitants de Cayenne et de St. Domingue, la declaration du 27. Septembre 1735. *Paris,* 1735. 8 pp.

—Portant reglement sur les caffez provenant des plantations et cultures des Isles Françoises de l'Amerique. *Paris,* 1736. 4 pp.

DAROLLES, E. Le café sur le marché française. *Paris,* 1885.

DECLARATION DU ROY, Qui regle la manière dont la Compagnie des Indes fera l'exploitation de la vente exclusive du caffé. Donnée à Versailles le 10. Octobre 1723. *Paris,* 1723. 15 pp.

—Concernant les cafez provenant des plantations et culture de la Martinique et autres Isles Françoises de l'Amerique. Donnée à Fontainebleau le 27. Septembre 1732. *Paris,* 1732. 9 pp.

GERMANY

SCHÖNFELD, KARL. Der Kaffee-Engrosshandel Hamburgs. *Heidelberg,* 1903. 135 pp.

GREAT BRITAIN

GREAT BRITAIN. BOARD OF TRADE. Tea and coffee, 1888, 1893, 1899-1900, 1903, 1908, 1910. Statistical tables showing the consumption of tea and coffee in the principal countries of Europe, in the

United States and in the principal British self-government dominions, and also showing the principal sources of supply. Parliament, House of Commons. Reports and papers, 1889, No. 12; 1894, No. 329; 1900, No. 351; 1901, No. 363; 1903, No. 304 (reprinted, London, 1905, 47 pp.); 1908, No. 378 (reprinted, London, 1911, 58 pp.); 1911, No. 275 (reprinted, London, 1911, 19 pp.).

GREAT BRITAIN. TREASURY DEPARTMENT. Copy of diagrams showing the consumption from 1856 to 1888 of tea, coffee, cocoa, and chicory, of alcoholic beverages, and of tobacco, compared with the increase of population. *London*, 1889. House of Commons, paper 121.

LIFEBELT COFFEE COMPANY, LTD. The statutory meeting of the company. *London*, 1909. 2 pp.

OBERPARLEITER, K. Der Londener Kaffeemarkt. 1912.

GUIANA, DUTCH

ROEP-PRAATJE, tusschen verscheiden persoonen, over de tegenswoordige staat van Surinamen en de laage prys der producten; waarin klaar aangetoond word de verkeerde gewoontens, wegens het verkoopen der coffy by inschryving, tot merkelyk nadeel der houders en geïntresseerdens der Surinaamsche obligaties. *Amsterdam*, 1774. 175 pp.

HAWAII

HAWAII (Republic) LABOR COMMISSION. Report on the coffee industry. *Honolulu*, 1895. 33 pp.

HAWAIIAN ISLANDS. DEPARTMENT OF FOREIGN AFFAIRS. The Hawaiian Islands, their resources, agricultural, commercial and financial. Coffee, the coming staple product. *Honolulu*, 1896. 95 pp. Also, *Washington*, 1897. 32 pp.

INDIA

CLIFFORD, FREDERICK. Indian coffee: its present production and future prospects. Journal of the Society of Arts, 1887, XXXV: 519–534.

INDIA. COMMERCIAL INTELLIGENCE DEPARTMENT. Note on the production of coffee in India.

INDIA. STATISTICAL DEPARTMENT. Production of coffee in India. 19—.

MEMMINGER, LUCIEN. The Indian coffee trade crisis. The Tea and Coffee Trade Journal, 1917. XXXII:506-510.

SCHUURMAN, G. E. Eenige beschouwingen over verkoop van gouvernements koffie in India. *Rotterdam*, 1877. 18 pp.

JAVA

KAMERWIJSHEID (Relating to forced native labor in the island of Java) 1879. 31 pp. Reprint from Algemeen Dagblad van Nederlandsche Indië, Sept. 16, 18, 22, 24, 25, 1879.

DE KOFFIECULTUUR op Java. Tijdschrift voor Nederlandsche Indië, new ser. 2, No. 5: 660-667.

KUNEMAN, J. De gouvernements koffie-cultuur op Java. *'s Gravenhage*, 1890. 201 pp.

ROSE, G. F. C. Eenge opmerkingen naar aanleiding van de conclusive van de neerderheid der commissie nit de Tweede Kamer der Staten-Generaal over de nitkomsten van het onderzoek betreffende de koffij kultuur op Java. 1874. 39 pp.

SUERMONDT, G., and LONDON, H. H. Correspondentie. De West-Java-Koffij-Cultuur-Maatschappij verdedigd tegen den schrijver van de koloniale kronijk in de Economist. 1868. 15 pp.

—West-Java-Koffij-Cultuur-Maatschappij verdedigd tegen de aanvallen van Volksblad en Arnhemsche Courant. *Amsterdam*, 1865. 44 pp.

—West-Java-Koffij-Cultuur-Maatschappij. Toegelicht. Supplement van den eersten druk met voorrede. *Amsterdam*, 1865. 19 pp.

VAN DEN BERG, NORBERT PIETER. Koffieproductie en koffieuitvoer. *Batavia*, 1884. 8 pp.

VAN VLIET, L. VAN W. De koffij-enquête in verband met de ontworpen West-Java-Koffij-Cultuur-Maatschappij. *Amsterdam*, 1871. 35 pp.

LIBERIA

ELLIS, GEORGE W. Coffee industry in Liberia. U. S. Monthly Consular and Trade Reports, 1904, No. 291: 21-22.

MORREN, F. W. Cultuur bereiding en handel van Liberia Koffie. *Amsterdam*, 1894. 86 pp.

MEXICO

HINOJOSA, G. Cultivo del café. *Mexico*, 1883. 8 pp. (Mexico. Ministro de Fomento.)

ROMERO, M. Coffee and india rubber culture in Mexico; preceded by geographical and statistical notes on Mexico. *New York*, 1898. 416 pp.

TERRY, L. M. Coffee culture in Mexico. Overland Monthly, 1901, new ser. XXXVII: 702–709.

NETHERLANDS

AMSTERDAM. VEREENIGING VOOR DEN KOFFIEHANDEL. Statistiek van koffie in Nederland. *Amsterdam*, 1914.

GROENEVELD, J. Tremijnzaken in koffie te Rotterdam. *Rotterdam*, 1893. 15 pp.

JACOBSON, J. "Ernstig bedreigd" "Opgeroepen," een woord naar aanleiding van "Erustig bedreigd" door den heer J. Jacobson en de daarop gevolgde geschriften van de heeren G. H. Mees en A. Plate, door en Nederlandes. *Amsterdam*, 1879. 12 pp.

JETS over de koffij-veilingen der Nederlandsche Handel- Maatschappij. *Rotterdam*, 1847. 24 pp.

NETHERLANDS (KINGDOM) Laws, statutes, etc. Wij Willem, bij de gratie Gods, konig der Nederlanden . . . enz., enz., enz. Allen den genen, die deze zullen zien. . . . salut! doen te weten: Alzoo wij, tot stijving der inkomsten van den staat, noodzakeljk geoordeeld hebben, dat de koffij binnen ons rijk gebruikt . . . aan eene belasting op de consumptie worde onderworpen. *'s Gravenhage*, 18—. 8 pp.

SUERMONDT, G., and LONDON, H. H. West-Java-Koffij-Cultuur-Maatschappij. Het advys der Kamer van Koophandel te Batavia, de Ond Koopman, enz. wederlegd. *Amsterdam*, 1866. 127 pp.

WAANDERS, F. G. van B. De koffiemarkt. *The Hague*, 1882. 27 pp.

PORTO RICO

PORTO RICAN coffee. Outlook, Mar. 24, 1906, LXXXII: 632; May 5, 1906, LXXXIII: 46-47.

UNITED STATES. PRESIDENT, 1901-1909 (ROOSEVELT) Message from the President of the United States relative to his visit to the island of Porto Rico. *Washington*, 1906. 200 pp. 59th Congress, 2d Session, Senate document 135. Message, dated Dec. 11, 1906, accompanied by petitions in relation to the coffee trade, etc., and losses by the hurricane of 1899; and the sixth annual report of the governor, Beekman Winthrop, dated July 1, 1906.

VAN LEENHOFF, JOHANNES W. The condition of the coffee industry in Porto Rico. *Mayaguez,* 1904. 2 pp. Porto Rico Agricultural Experiment Station. Circular No. 2.

WEYL, W. E. Labor conditions in Porto Rico. U. S. Bureau of Labor. Bulletin, 1905, XI: 749-753.

SPAIN

SPANIEN. Bestimmungen über die Einfuhr von Kaffee und Kakao aus Fernando Po. Deutsche Handels-Archiv. 1901, 141.

TONKIN

ROTTACH, EDMOND. L'organisation économique de l'Indochine et le café au Tonkin. Société de Géographie commerciale de Paris. Bulletin, 1913, XXXV: 643-660.

UNITED STATES

AMERICAN tea and coffee trade from 1847 to 1916. Tea and Coffee Trade Journal, 1917, XXXIII: 28.

COFFEE EXCHANGE OF THE CITY OF NEW YORK. Annual Report.

COFFEE trade of the United States. Chamber of Commerce, *New York.* Annual Report 1908-1909, pt. 1: 28-29.

COFFEE Trade of the United States for the past six years. Tea and Coffee Trade Journal, 1917, XXXIII: 326-329.

COFFEE TRADE of the United States since 1821. Tea and Coffee Trade Journal, 1918, XXXIV: 336-338.

CUNNINGHAM, E. S. Export of Mocha coffee to the United States. U. S. Consular Reports, 1899, LXI: 625-628.

OUR fastest growing coffee port, including handling green coffee at San Francisco. The Tea and Coffee Trade Journal, 1918, XXXIV:524-528.

RENAISSANCE of tea and coffee. The Tea and Coffee Trade Journal, 1919, XXXVI:218-229.

SLOSS, R. New York coffee party. Everybody's Magazine. 1913, XXVIII: 772-783.

TEA, coffee, wines, etc.; consumption of tea, coffee, wines, distilled spirits, and malt liquors in the U. S. since 1870, per capita of population. *Washington* 1896-1899. U. S. Agriculture Dept. Yearbook, 1895: 552; 1896: 595; 1897: 754; 1898: 723.

UNITED STATES. BUREAU OF STATISTICS. Imports of coffee and tea. 1790-1896. *Washington,* 1896. *Also,* Monthly Summary of Finance and Commerce, 1896, new ser. IV: 670-690.

WAKEMAN, ABRAM. History and reminiscences of lower Wall St. and vicinity. *New York,* 1914. 216 pp.

VALORIZATION

ALTSCHUD, F. Die Kaffeevalorisation. Jahrbüch für Gesetzgebubg, 1910, 2.

ATTACKING Brazil's coffee trust. Literary Digest, 1912, XLIV: 1242-1244.

BRAZIL'S failure to control the price. American Geographic Society. Bulletin, 1909, XLI: 220-222.

CAMPISTA, DAVID. Valorisação do café e Caixa de conversão. *Rio de Janeiro,* 1906: 53.

CHANTLAND, WILLIAM T. Valorization of coffee. A detailed report of the transactions and facts relating to the valorization of coffee. *Washington,* 1913. 15 pp. U. S. 63rd Congress, 1st session. Senate Document, 36.

COFFEE combine at bay. Tea and Coffee Trade Journal, 1912, XXII: 497-513.

COFFEE valorization and the Sherman law. Journal of Political Economy, 1913, XXI: 162-163.

COFFEE valorization scheme and the coming harvest, The. Economist, 1909, LXVIII: 910-911.

DE CARVALHO, J. C. O café do Brazil, estudos a favor da propaganda para a augmento do consumo e valorisação do café do Brazil no estrangeiro. *Rio de Janeiro,* 1901. 41 pp.

—O café, sua historia, des valorisação e propaganda pada o augmento do consumo na Europa o algodão, a industria da tecelagem do algodão, sua origem, appareicimento e desenvolvimento na America do Sul. Conferencias publicas realissadas na séde la Sociedade nacional de agricultura. *Rio de Janeiro,* 1900. 53 pp.

DENIS, PIERRE. La crise du café au Brésil et la valorisation. Revue politique et parlementaire, 1908, LVI: 494-520.

FERREIRA RANGEL, SYLVIO. Valorisação de café. *Rio de Janeiro,* 1906. 18 pp. *Also,* A Lavoura, IX: 81-90.

FERRIN, A. W. Brazilian plan of limiting shipments. Moody's Magazine, 1912, XIII: 409-414.

How the coffee trust has held its grip. Current Literature, 1912, LIII: 52-54.

HUEBNER, G. G. Making green coffee prices. Tea and Coffee Trade Journal, 1912. XXI: 442-449.

HUTCHINSON, LINCOLN. Coffee valorization in Brazil. Quarterly Journal of Economics, 1909, XXIII: 528-535.

KURTH, HERMANN. Die Lage des Kaffeemarktes und die Kaffeevalorisation. Inaugural dissertation, *Jena,* 1907. 34 pp.

LALIÈRE, A. La valorisation du café. Revue économique internationale, Feb. 15-20, 1910, VII, pt. 1: 316-350.

LÉVY, MAURICE. La valorisation du café au Brésil. Annales des Sciences politiques, 1908, XXIII: 586-603.

MACFARLANE, JOHN J. Coffee valorization analysed. Tea and Coffee Trade Journal, 1910, XIX: 103-110.

MCKENNA, W. E. Cause of advance in price. Public, 1912, XV: 508.

OLAVARRÍA, I. A. Liga de los paises cafeteros. *Caracas,* 1898. 20 pp.

PAYEN, ÉDOUARD. Au Brésil: la valorisation du café. Questions diplomatique et coloniales, XXIV: 728-740.

RAISING prices by destruction. Nation, 1909, LXXXVIII: 520-521.

RAMOS, F. FERREIRA. La valorisation du café au Brésil. 1907.

RATZKA-ERNST, CLARA. Welthandelsartikel und ihre Preise. Eine Studie zur Preisbewegung und Preisbildung. Der Zucker, der Kaffee und die Baumwolle. *München,* 1912. 244 pp.

SCHMIDT, FRITZ. Die Kaffeevalorisation. Jahrbücher für Nationalökonomie und Statistik, 1909, ser. 3, XXXVIII: 662-670.

SIELCKEN, HERMANN. Coffee valorization explained. Tea and Coffee Trade Journal, 1911, XXI: 471-481.

—A defense of valorization. Tea and Coffee Trade Journal, 1912, XXIII, Supplement to no. 6: 17-21.

Sloss, R. Why coffee costs twice as much. World's Work, 1912, XXIV: 194–205.

Suit against the coffee trust. Nation, 1912, XCIV: 508–509.

Syndicat général de défense du café et des produits coloniaux. Bulletin, *Paris*, 1911, II: No. 6.

Theiss, Lewis Edwin. Why the price of coffee increases. Showing how a few rich men, who want to be richer, are pushing up the price of coffee. Pearson's Magazine, 1911, XXVI: 456–463.

Turmann, Max. Un état qui fait du commerce. Le Brésil et la valorisation du café. La Revue hebdomadaire, 1909, VIII: 450–470.

Ukers, William H. The great coffee corner. Saturday Evening Post, 1909, CLXXXI: 5-7.

Valorizing coffee. Review of Reviews, 1912, XLVI: 21–22.

Value of coffee. Current Literature, 1903, XXXV: 746–747.

Wessels, L. De opheffing van het monopolie en de vervanging van de gedwongen koffiecultuur op Java door een staatscultuur in vrijen arbeid. *'s Gravenhage*, 1890. 72 pp.

Wileman, J. P. Unparalleled valorization. Tea and Coffee Trade Journal, 1911, XX: 444–445.

Zur Frage der Kaffee-Valorisation. Deutsche Wirtschafts-Zeitung, 1913, IX: 237–243.

INDEX

NOTE. As this is a book about coffee, the entries in the Index refer—unless otherwise specified—to that general subject, and more particularly to *Coffea arabica;* other varieties are distinguished by their scientific or trade names. Thus, "Adulteration" refers to the adulteration of coffee; and "Adulterants," to the substances used for that purpose.

Abbreviations Used

bev.	signifies	beverage	*d.*	signifies	died	*pat.*	signifies	patent, patentee
biog.	"	biography	*hyb.*	"	hybrid			
C. or c.	"	coffee	*ill.*	"	illustration	*per.*	"	periodical
C.	"	*Coffea*	*inv.*	"	invention	*pseud.*	"	pseudonym
chk.	"	coffee-house keeper	*newsp.*	"	newspaper	*q.*	"	quoted
			pamph.	"	pamphlet	*v.*	"	vessel, ship

Italicized words are either scientific terms or titles of publications. Titles of books are followed by the name of the author, if known; other publications are distinguished as broadsides, newspapers, pamphlets, or periodicals.

Geographical names are distributed under various topics, such as "Acreage," "Coffee houses," "Consumption," "Cultivation," "Exports," "Imports," "Production," and the like.

A Mon Café, Ducis..... 548
Abbas, wife of..... 21
Abbey, Charlotte, *q*..... 177
Abbey, Roswell, *pat*..... 245
Abbey, Freeman & Co..... 482
Abd-al-Kadir.....14, 431
Abd-al-Kadir ms..31, 431, 542, 543
—Description..... 541
Abele, Chris, *pat*.....630, 638 644, 645; *d.* (1910) 641
Abeokutae, C..... 142
—Java..... 216
Abeokutae x *liberica, hyb*..... 146
Abigail..... 13
Aborn, A. C., *q*
—Cost card for roasters..... 392
Aborn, Edward.....439, 514, 651, 701, 713, 714, 716, *q*. 715
Aborn, W. H..... 715
About, Edmond F. V., *q*..... 685
Abraham..... 18
Abyssinian c.....353, 376, 377
Account of his Journeys, An, Olearius, *q*..... 22
Ach (chemist)..... 186
Ach, F. J.....488, 509, 511 513, *q*. 408
Acidity, percentages in c..... 719
Acid c.'s..... 397
Acids.....159, 168
Acker, Finley, *pat*...472, 645, 649, 701
Acker, Merrall & Condit Co., 478, 494, 498
Ackland, James, *chk*..... 118
Acreage
—Africa, British East....230, 285
—Argentina..... 236
—Australia.....238, 284
—Brazil (sq. miles)..... 277
—Ceylon.....236, 283
—Ecuador.....236, 278
—Federated Malay States..238, 284
—Guadeloupe..... 233
—Guatemala..... 219
—Guiana, British..... 279
—Haiti.....220, 281
—Hawaii..... 241
—India.....226, 227, 282
Acreage (*cont'd*)
—Jamaica.....232, 281
—Java..... 215
—Leeward Islands..... 282
—Mauritius..... 285
—Nyasaland.....230, 285
—Philippines..... 284
—Porto Rico..... 223
—Salvador.....219, 280
—Uganda.....230, 285
—Venezuela..... 212
—Yemen..... 230
Adams, *chk*..... 559
Adams, Abigail, *q*.....467, 468
Adams, Isaac, *pat*..... 245
Adams, John 110, 113, 593
Adams, Pygan..... 609
Adams & Son..... 710
Addison, Joseph....75, 80, 84, 557, 558, 560, 572, 575, 576, 577, 578, 593
Addison, Life of, Johnson, *q*... 561
Adjudication (N. Y. Exch.)... 334
Adulterant Act, British..... 404
Adulterants ...153, 169, 170, 404
Adulteration..... 404
—Italy..... 686
—Reasons for..... 170
—U. S. law affecting..... 410
——rulings against..... 337
Advertisements
—Arbuckle's (1861)..... 496
—Boston (1748)..... 467
—Cauchois's Private Estate.. 498
—Coffee-house
——Boston..... 112
——New York (1781)....119, 120
—Coffee mills (1665)..... 617
—Divination by coffee grounds 558
—First (Abd-al-Kadir's, 1587) 431
—First American-newspaper... 468
—First newspaper (1657)..56, 432
——Of coffee only, *ill*..... 434
—First printed (1652), *q*..54, 432, 459, 461
—London coffee-house, *q*..... 582
—Newspaper and periodical 432-434
—Piazza coffee room, *q*..... 581
Advertisements (*cont'd*)
—Song by Zecchini..... 549
—Turks Head coffee house... 582
Advertising.....431-465
—Booklets (J. C. T. P. C.).. 455
—Brands.....455, 462-465
—Early history.....431-434
—Electric signs..... 443
—Evolution of.....434, 435
—France..... 680
—Government propaganda 444-459
—Injudicious ..435, 537, 438, 461
—Joint coffee trade.....439, 445-459, 514, 515
—Lantern slides..... 443
—Motion pictures 443, 445
—Package-coffee 440-443
—Retail.....443, 444
—Trade..... 442
—Trade journalists as experts 431
—United States.....434-465
Advertising charts 440, 441
Advice against the plague, Harvey..... 58
Advisory Board, C. (*see* Gov't control)
Affinis, C., hyb..... 146
Aga, Soliman.....33, 92
Aging
—Artificial 157, 158, 471, 474
—Natural 156, 157, 167, 342, 345, 358
Agriculture, U. S. Dept..... 722
Aigentliche Beschreibung der Raisis, etc., Rauwolf, *q*... 12
Aiken, G..... 612
Akers, Frederick.....498, 499
Alameda (brand)..... 441
Albanese..... 185
Albertenghi..... 558
Alcoholic beverages
—Coffee replaces in Am. colonies..... 696
—Sold in London c. houses.61, 78, 81
Alcholism, effect of c. on..... 182
Aldhabani (*see* Gemaleddin)
Ale wives' complaint against c. houses (*pamph*)..... 72

Alexander, S. R. 485
Alexander & Baldwin 488
Alhadrami, Muhammed 16
Al-Haiwi (The Continent), Rhazes 11
Alison, Archibald 102
Alkaloids in c. 159, 160, 161
All Souls' college, Oxford 41
Allain, F. V. 487
Allanston, *q*. 179
Allen, *q*. 159
Allen, Ida C. Bailey, *q*. 723
Allen, James Lane, *q*. 564
Allom, Thomas 663
Alpini (Alpinus), Prospero 43, 431, 541, 543; *q*. 2, 12, 26, 41
Alt und neu Wien, Bermann, *q*. 51
Altenberg, Peter, *q*. 549
Altitudes
—Best 198, 200
—Bolivia 236
—Brazil 205
—Colombia 208
—Costa Rica 225
—Guatemala 219
—Hawaii 239
—Honduras 234
—Indo-China, French 237
—Jamaica 233
—Java 216
—Mexico 222
—Nicaragua 227
—Peru 236
—Salvador 217
—Venezuela 212, 263
—Yemen 231
Alumini Etonenses, Harwood, *q*. 581
Amarilla, C., hyb. 140
Amber (essence of) in c. 695
Ambergris in c. 709
Ambrosia Arabica, Caffè Discorso, Rambaldi 558, *q*. 696
American Can Co. 472, 473
Am. Chem. Journal, q. 165
American Coffee Co. 521
American Grocer, per. 526
American Hist'l Register, q. 126
Am. Journ. Ophthalmology, q. 182
American Legion, *v*. 316
American Mills 502
American Sugar Refining Co. 689
Ames, Allan P. 448
Amman & Co., C. 477
Amsinck, Gustave 479
Amsinck & Co., G. 479, 484, 485, 534
Amurath III 20, 664
Amurath IV 20, 38
Analyst, per, q. 165
Anatomy of Melancholy, The, Burton *q*. 543, 38
Ancilloto, Marco 27
"—" *and Other Poets*, Untermeyer, *q*. 553
Anderson, *pat*. 247
Anderson, Adam, *q*. 72, 73, 74
Anderson, E. D. 472
Anderson, Mrs. *chk*. 86
Andreas, A. T., *q*. 106
Andrews, William Ward, *pat* 627, 700
Andrews & Co., C. E. 506
Andry, Doctor 694
Anecdotes 565-585
—Addison, Joseph 576
—Bacon, Sir Nicholas 570
—Bismarck 565, 570
—Bonaparte, Napoleon 94, 593
—Brillat-Savarin 565
—Champmeslé 91
—Cibber, Colley 579
—Compton, Bishop of London, 570
—de Sevigné, Mme. 91, 565
—Dryden, John 574, 575
—Fontenelle 565
—Foote, Samuel 580, 581
—Garrick, David 569, 579, 580
—Goldsmith, Oliver 573, 574
—Grevy, Jules 566
—Hannes, Dr. 572
—Hogarth, William 580
—Inchbald, Mrs. 576
—Jeffreys, Judge 570
Anecdotes (*cont'd*)
—Johnson, Samuel 567, 568, 569
—Kant, Immanuel 562
—Kemble, John 581
—London coffee-house 567-585
—Louis XIV and DuBarry 566
—Lowther, Sir James 584
—Macklin, Charles 580, 581
—Milton, John 584
—Napier, Robert 700
—Page, Judge 570
—Phipps, Sir William 111
—Pope, Alexander 575, 576, 577, 578
—Racine 91
—Radcliff, Dr. 572
—Roach, Tiger 579, 580
—Roubillac 583
—Saint-Foix 566, 567
—Savage, Richard 570
—Sheridan, Richard Brinsley, 581
—Sloane, Sir Hans 582
—Steele, Sir Richard 570
Swift, Jonathan 570, 578, 579
—Talleyrand, Prince 565
—Thurlow, Lord 572
—Voltaire 178, 565
—Ware (Brit. architect) 584
Anezi c. 351, 368
Angel & Co., A. 340
Angustifolia, C., hyb. 140
Ankola c. 355, 371
Annales, Liebig, *q*. 711
Annales Politiques et Littéraires, per., q. 175
Annals (of Phila.), *q*. 120
Annals on Applied Biology, q. 155
Anne, Queen 82
Année Littéraire, q. 6
Anstead, R. D., *q*. 155
Anthony, Frank M. 479
Antiquarian Rambles in the Streets of London, Smith, *q*. 569, 570
Antiseptic, C. as an 180, 182
Apel, Paul E. 506
Apparatus (*see* Machinery)
Appenzeller, John C. 503
Applegate, John 492
Apples in c. (Russia) 686
Apreece 581
Araba (driver) 658
Arabia, Description of, Niebuhr, *q*. 22
Arabian Chrestomathy, de Sacy *q*. 2
Arabian c. (*see* Mocha)
Arabian Nights, The. 31
Arabica, C. (see note, p. 769)
Arbitration (N. Y. Exch.) 333
Arbor yemensis fructum cofe ferens, etc., The, Douglas 42, 543
Arbuckle advertising 462-465
Arbuckle, Charles 521, 522
Arbuckle, Christina 524
Arbuckle, John 440, 469, 470, 496, 523, 524; *biog*. 517, 521; *d*. (1912) 524; *pat*. 647
Arbuckle, John (Mrs.) 523
Arbuckle Brothers 443, 470, 480, 482, 499, 502, 522, 523
—Coating coffee 396
—Plant 524-526
—Business 521-526
Arbuckle Farm 524
Arbuckles, The 519
Arbuckles & Co. 507, 522, 524, 635
Arbuthnot, Dr. 81, 84, 578, 579
Arcade Manufacturing Co. 645, 653
Archives of Psychology, q. 186
Arcularius, James L. 499
Arding, Dr. Charles 118
Arduino, Pier Teresio, *pat*. 651
Arias 220
Ariosa (brand) 440, 441, 469, 470, 524
—Origin of name 522
Ariza & Lombard 488
Arkell, Bartlett 538
Arkell, W. J. 538
Arlington, Earl of 582
Arliss, George 130; *q*. 556
Armstrong, Dr. 578, 580
479, 491, 518, 527; *biog*. 517
Arnold, Francis B. 477, 479, 491, 518
Arnold & Co., B. G. 479, 480 491, 528
Arnold, Dorr & Co. 479, 482, 518
Arnold, Hines & Co. 482
Arnold, Mackey & Co. 477, 479
Arnold, Sturgess & Co. 479
Arnoldiana, C. 142
—Java 216
Aroma
—Advertising value, retail 423
—Best grinds to preserve 719, 720
—Cause of 163, 165
—Chaff rich in 708
—Cup-testing for 356
—Preservation of 170, 712, 717
Aroma Coffee & Spice Co. 502
Aron & Co., J. 340
Arroba (weight) 268
Art collections
—Berlin museums 46
—Boston Mus. of Fine Arts 612
—Bostonian Society 613
—London
——Beaufoy (Guildhall Mus.) 62, 582, 602
——British Museum 604
——Guildhall Museum 602, 603
Armstrong & Barnewall 476
Arne, Dr. 579
Arnold, *q*. 136
Arnold, Benjamin Green, 469,
——Victoria and Albert Museum 601, 603
—New York
——Clearwater (Met. Mus.) 609
——Halsey (Met. Mus.) 609
——Metropolitan Museum
———Pictures 591
———Service, artistic and historical 599, 600, 607, 608, 612
—Paris: Clunny Museum 600
—Portland: Maine Hist. Soc. 614
—Potsdam museums 46
—Salem (Mass.): Essex Inst. 614
—Sam Ireland's 593
—Vienna: Austrian Art Soc. 590
—Washington
——Peter (U. S. Nat'l Mus.) 599
Arthur, *chk*. 588
Arthur's, Lyons, *q*. 563
Arvicimensis, C. 144
—Java 216
Ashcroft, John, *pat*. 157
—Trade mark 470
Ashland, James 477
Ashley, James, *chk*. 582
Astbury 604, 612
Astor Library 124
Atha, F. P. 509; *q*. 422
Athenae Oxiensis à Wood, q. 41
Atlas Mills 498
Attal (Arabian bale) 266
Atwood & Co. 509
Atwood & Holstad 509
Aubrey, John 557; *q*. 40, 53, 56, 59, 60
Auctions
—Amsterdam 44
——First (1711) 213
—London 327
—Netherlands E. Indies 312
Augagneuri, C. 147
Auger & Co., B. E. 487
Austin, Nichols & Co. 494, 499
Australian c. 355, 376
Autobiography, Haydon, *q*. 583
Autocrat (brand) 441
Automatic Weighing Machine Co. 470
Avicenna (Ibn Sina) 11, 17, 431; *q*. 12
à Wood, Anthony, *q*. 41
Ayduis 14
Ayer Bangies c. 355, 371
Ayer & Son, N. W. 448
Aymar & Co. 476

Babillard, *q*. 559
Bach, Johann Sebastian 46; *q*. 593-599

Bache, Theophylact..... 475
Bacon, Francis....543, 557; *q.* 38
Bacon, Sir Nicholas..... 570
Bacon, Raymond F., *q*..... 714
Bacon, Williamson..... 480
Bacon & Co., Williamson..... 480
Bacon, Stickney & Co..... 508
Bacteria, Effect of c. on..180, 181
"Bad" coffee..... 22
Bagnell..... 579
Bags, paper (*see* Containers)
Bahias (c.) 341, 343, 367
Baillon..... 558
Baiz, Jacob..... 485
Baiz & Wakeman..... 478
Baker (chemist), *q*..... 165
Baker, John Gulick, *pat*..469, 639
Baker, Roger..... 117
Baker, T. K., *pat*..... 647
Baker, William E., *pat*..... 649
Baker & Co..... 649
Baker & Sons, Joseph..... 640
Baker & Young..... 485
Baker Importing Co..... 539
Baker *vs.* Duncombe (*pat.* suit) 649
Baldi, *q*..... 184
Baldwin, Captain..... 538
Baldy & Co., J. B..... 506
Bales, Arabian.....266, 268
Balis (c.) 355, 374
Balliol college, Oxford.....40, 41
Ballot-box, origin of 60
Ballou & Cosgrove..... 488
Baltagi 22
Balzac, Honoré de...102, 556; *q.* 557
Balzac, Lawton, *q*..... 557
Ban 26, 35
Bananas and c. (*bev.*)..... 694
Banesius (*see* Nairon)
Bangs, John Kendrick, *q*..... 564
Bank of New York..... 120
Bank of Pennsylvania, *ill*.... 129
Banks, H. W..... 479
Banks & Co., H. W..478, 479, 485
Baptized by Clement VIII..... 26
Barbados c.....351, 362
Barbaro, Angelo Maria..... 28
Barbor. *inv*..... 637
Barclay, Florence L., *q*..... 563
Barclay & Hasson..... 508
Barker, *pat*..... 640
Barmaids 75
Barnardini, *q*..... 186
Barnes, Dr., *q*..... 176
Barnes, Sir Edward..... 237
Barnicle, Michael..... 482
Baro, José..... 651
Barotti, L..... 548
Barquisimento, c..... 349
Barr, Thomas T..... 482
Barr & Co., T. M..... 520
Barr & Co., T. T.....477, 482
Barr, Lally & Co..... 482
Barrington Hall (brand)..... 441
Barrington Hall Soluble (brand) 539
Barrowby, Dr. *q*..... 580
Barth, G. W..... 639
Barthez 566
Bartlett (artist) 668
Bartow, H..... 497
Baruch & Co..... 488
Batavia c.....355, 373
Baudelaire 565
Baukobensis, C..... 216
Bay, Gottfried..... 644
Bayne, Daniel K..... 478
Bayne, L. P..... 478
Bayne, Jr., William..448,473 478, 535
Bayne, Sr., William..... 478
Bayne & Co., William..... 485
Beach & Co., J. D.....508, 509
Beaham-Moffatt Mfg. Co..... 508
Bean broth, Javanese..... 11
Beans as friendly tokens..... 655
Beard, Eli..... 496
Beard, Samuel S..... 496
Beard & Co., Samuel S...482, 496
Beard & Cummings..482, 494, 496, 507
Beard & Howell..... 496
Beard, Sons & Co., S. M..... 499
Beards & Cottrell.....482, 496
Beaufoy Catalogue, Burn, *q*.. 583
Beaumarchais 94
Beauvarlet, J..... 587
Beccaria, Cesare.....30, 558
Becker, Joseph 482
Beckley, S. W..... 507
Beckmann, Alfred H., *q*..... 418
Bedford, Duke of.....576, 593
Beecher, C. McCulloch..... 491
Beede, N. B..... 508
Beekmans, The..... 475
Beer, *q*..... 182
Beer, Coffee.....710, 711
Beeson, Emmet G., *q*..... 679
Bégon 6
Behrens & Co., A..... 482
Belcher, Jonathan, *chk*..... 112
Belgians, King of..... 672
Bell & Co., J. H..... 502
Bell, Conrad & Co..... 485
Bell, Conrad & Webster..... 502
Belli 549, 557
Bello (Bellus), Onorio.. 31
Belna (brand) 539
Bencini, Antoni, *pat*..... 625
Benedicenti, *q*..... 186
Benedict & Co..... 485
Benedict & Gaffney..494, 498, 499
Benedict & Thomas.....494, 501
Bengalensis, C 146
Bengiaziah .....17; *q.* 17
Bennet, Henry 582
Bennett, J. Hughes, *q*..... 181
Bennett, James..... 482
Bennett, William..... 482
Bennett & Becker.....482, 499
Bennett & Son, William Hosmer 478, 482
Bennett, Schenck & Earle.... 499
Bennett, Sloan & Co.....498, 499
Bentley, Benton & Co..... 482
Berchoux 548
Berg, Thomson & Davis 502
Berhard, Charles..... 505
Berkeley, Bishop..... 550
Bermann, M., *q*..... 51
Bernard, Claude M. V., *pat*... 629
Bernard (Dean of Derry).573, 574
Bernhardt, Sarah..... 565
Bernheimer, *q*..... 163
Bernier .....31, 543, 594; *q.* 616
Berry (*see* Fruit)
Berry, Benjamin..... 508
Berry & Sons, N..... 501
Berthier 102
Berytus (Beirut), Bishop of, *q*... 42
Besant, Sir Walter, *q*.....75, 78
Bethmont 566
Betrand, *q*..... 163
Better C.-making Com..... 439
—Recommendations 713, 715
Better coffee-making publicity
—Favored by N. C. R. A.... 513
Beurre, Café avec..... 683
Beverage
—Buds as basis 694
—Chemical analysis..... 714
—Consumption in U. S..... 689
—Definition, U. S. Dep't of Agr. 722
—Discovery (13th century)... 655
—Evolution of..... 693
—Fruit and bananas 694
—History, early 11-23
—Hull and pulp as basis..... 15
—Husks as basis..... 26
—Origin.
——First reliable date (1454) 16
——Legendary 11, 13, 16
Beverages Past and Present, Emerson, *q*..... 566
Bey, Kair..... 71
Bible 12, 13
Bibliothèque Nationale..... 16
Bichivili, *q*..... 22
Bichivili manuscript..... 542
Bickford, Clarence E.....487, 488
Bickford & Co., C. E..... 488
Biddulph, William, *q*.....36, 543
Biggin, Coffee 624
—Origin of name..... 699
—(*See also* Infusion devices).
Bill & Co. Alexander H..... 501
Binz, *q*.....182, 183
Biographie Universelle, Michauds, *q*..... 8
Bishop, J. Leander, *q*....105, 115
Bishop, Nathaniel, *chk*..... 109
Bisland & Brown..... 497
Bismarck, Prince.....565, 566
Bitter (*see* Flavors).
Bitter c.'s 397
Bjorstjerne Bjornson, *v*..... 316
Blackall, Alfred H.....501, 502
Blair, Henry.....496, 526
Blair, Henry B..... 494
Blair, Sidney O..... 502
Blake, Charles F..... 482
Blake, Walter F..... 535
Blake & Bullard..... 482
Blakeman, C. R..... 479
Blanc, Louis..... 103
Blanchard & Bro..... 501
Black bean..... 329
—Scale 330
Black broth, Lacedemonian 13, 36, 38, 40, 58
Blanco, Guzman..... 529
Blaney, Henry R., *q*..... 110
Blanke, C. F. *pat*..... 651
Blanke Tea & Coffee Co., C. F. 502, 530
Blending 396–400
—Retail 418–421
Blending machinery.....383, 385
Blends 722, 723
—French preferences..... 680
—Package coffees..... 408
—Restaurants 399
Blickman, Saul, *pat*..... 652
Bliss, Dallett & Co..... 482
Blodgett, Albro..... 507
Blodgett, Henry P..... 507
Blodgett-Beckley Co..... 507
Blohm & Co..... 340
Blook & Varwig 503
Bloom, Daniel, *chk*..... 118
Bloom Bros..... 488
Blossoms,
—Bridal flowers in Antilles... 565
—Chemistry of..... 155
Blotting-paper filters..... 708
Blount, Sir Henry.....40, 54, 543; *q.* 13, 38, 56
Blue Mountain c.....350, 362
Blunt, Anne, *chk*..... 56
Board of Experts favored..... 513
Boardman, George..... 508
Boardman, Howard F..... 508
Boardman, Thomas J..... 508
Boardman, William..... 508
Boardman, William F. J..... 508
Boardman & Sons, Wm..... 508
Boardman & Sons Co., Wm... 508
Boaz 13
Boconos c.....349, 350, 365
Bodanzky, Arthur..... 597
Bodleian library..... 53
Boekit Gompong c.....355, 372
Boengie c..... 355, 374
Boerhaave, Prof..... 543
Bogotas (c.) 348, 349, 363
Bohler & Weikel..... 501
Boiling,
—Discussed (Trigg)..... 720
—N. C. R. A. recommendations 721
Boindin, Abbie Alary..... 554
Boinest, Walter B..... 498
Bolivian c.....350, 367
Bon 12, 26, 35, 41
Bonaparte, Napoleon...94, 96, 100, 485; *q.* 566
Bondzynski 185
Bonifeur, Café (Guadeloupe).. 257
Bonnard 98
Bonnieri, C..... 147
—Caffein content..... 161
Bontius, Jac. *q*..... 2
Book, Nicholas, *inv*..... 617
Booker 69
Booklets, advertising..... 455
Booms,
—Ceylon (1845)..... 287
—U. S. (1814)..... 468
Booms and Panics.....527–530
Booth, A. F..... 508
Booth, Otis W..... 480
Booth & Linsley.....477, 480
Boquette c.....348, 361

Borino & Bro. 486
Boscul (brand) 441
Bossi, Vernetti & Bartolini... 651
Boston coffee party 467, 468
Boston News Letter, newsp... 433
Boston tea party ..106, 110, 689
Boswell, James..81, 89; *q.* 567
568, 583
Botanical description...12, 26, 41, 131-138, 248, 249
—Classification 132
—Species, number of..... 132
—Microscopic 149–152
Botanical gardens (*see* Gardens).
Botanists disagree..... 132
Botany of coffee.....131–148
Botteya di caffè (comedy), Goldoni 28
Bouche, Charles J..... 505
Boucher, Francois..... 588
Boulton & Co., H. L..... 340
Boulton, Bliss & Dallett..... 482
Bounties,
—Guadeloupe 234
—Australia (proposed) 239
Bour, J. M..... 507
Bour Co.....443, 506, 507
Bourai c.....351, 368
Bourbon c.....353, 378
Bourbon, Grand, c.....352, 353
Bourbon Le Roy c.....352, 353
Bourbon rond 352, 353
Bourbon-Santos c 260, 341, 342, 366
Bourdon, Isid, *q*..... 565
Bourne, H. R. Fox, *q*..... 54
Bovee & Co., Wm. H..... 506
Bowdoin, Gov. (*see* Chicory).. 468
Bowers, B. O..... 480
Bowman, *chk*.....53, 54
Bowman, John, *pat*..... 637
Bown, W. J. H..... 510
Bown & Bro., W. T..... 507
Bowring & Co..... 488
Boyd & Co., G..... 501
Braas, Joseph..... 507
Brancho, Joao Alberto C.... 9
Bradford, Cornelius, *chk*..119, 120
Bradford, John R. (Mrs.).... 614
Bradford, Phebe C..... 614
Bradford, William, *chk*....127, 128, 129
Bradley, Prof. R..... 42
Bradley, Richard, *q*..... 58
Brady, Cyrus Townsend..... 563
Brady, Dr., *q*..... 177
Bramhall Deane Co..... 634
Brand advertising....455, 462–465
Brand, Carl W.....448, 507, 514
Brandenburg, Elector of..... 45
Brandenstein, Edward..... 506
Brandenstein, M. J..... 506
Brandenstein, Manfred..... 506
Brandenstein & Co., M. J..471, 488, 506
Brands 434, 435, 440, 441, 462, 465, 469, 470, 474, 496, 522-524, 538, 539
Brasher, Abraham..... 609
Brasher, Ephraim..... 609
Brass, Italico..... 556
Braun Co.....646, 472
Brayley (topographer)..... 582
Brazil Coffee Co..... 478
Brazil coffee delegation..... 514
Brazil-grading 331
Brazil Trading Co..... 485
Brazils (c.) 341-345, 366
Breakfast (brand)..... 524
Bregolini, Ubaldo..... 27
Brett, Colonel..... 576
Breur, Moller & Co..... 340
Brewing,
—Altitude limit 9,000 feet.... 715
—Art of
——Calkin's patent 702
——Muller's patent..... 702
—Below boiling point....515, 707, 714, 717
—Care in.....723
—Chemistry of.....168, 718–720
—Clarifying 704, 705
—Comparison of methods..720, 721
—Evolution of.....702, 704
Brewing (*cont'd*)
—Filtration *vs.* percolation... 515
—Incorrect methods injurious. 179
—N. C. R. A. recommendations 717
—Research, Un. of Kansas.... 714
—Scientific 718–722
—Thurber's method..... 712
Brewing devices (1760-1855) 620–629
—Acker's (1884) 645
—American colonial 709
—Andrews' reversed Fr. drip (1841) 627
—Best materials.....717, 721, 722
—Blickman's (1916) 652
—Care of..... 722
—Casseneuve's reversed Fr. drip 623
—Cauchois's porcelain-lined urn 645
—Cauchois's centrifugal pump 651
—Chapman's tea or coffee pot 649
—Chronology (1879-1921).... 643–654
—Combined making and serving pot..... 616
—Comparative test (1915)... 714
——(1917) 716
—Criterion 674
—Earthenware, painted (Abyssinia) 655
—First (boiler).....615, 616
—First French patent (1802) 621, 699
—First U. S. patent (1825) 469, 624, 625, 699
—Fountain 674
—German patents (1877-85).. 638
—Levant (1691)..... 696
—Le Brun's Cafetière 710
—Manning's combined 637
—Martelley's patent (1825).. 699
—Moneuse's urn (1869)..... 639
—Muller's Art of Making Coffee 653
—Napier-List machine 700
—Parker's steam-fountain 705
—Platow 674
—Rabaut's reversed Fr. drip (1822) 623
—Savage's tea or coffee pot (1904) 649
—Senè's, "without boiling" (1815) 623
—Still's steam coffee-maker (1902) 647
—Syphon (Napier)..... 674
—Verithing (Summerling's)... 674
—White's urn (1908)..... 651
—Wyatt's distillation apparatus 699
Brewing methods,
—Abyssinia 655
—American colonies.....708, 709
—Arabia 658-663, 695
—Australia 692
—Austria 671, 672
—Belgium 672
—Brazil 691
—Bulgaria 678
—Canada 686, 687
—Ceylon 670
—China 670
—Cuba 692
—Denmark 678
—England (1662) 696; (1722) 697; (19th cent.)...704-707
—Europe 670–686
——(19th century) 704–708
—Finland 678
—France 678–683
——(1669) 696; (1711-1812) 696-698; (19th cent.) 707, 708
——Buc'hoz's recipe 708
—Germany 684, 685
—Great Britain.....672-678
—Greece 685
—India 670
—Italy 686, 696
—Japan 670
—Java 670
—Levant (1691) 696
—Martinique 692
—Mexico 687
Brewing methods (*cont'd*)
—Netherlands 686
—New Orleans 689, 690
—New York.
——Hotel Ambassador..... 691
——Waldorf-Astoria 690, 691
—New Zealand..... 692
—Oriental, early.....31, 694, 695
—Paris 670
—Panama 692
—Persia 670
—Philippines 692
—Portugal 686
—Scandinavia 686
—Roumania 686
—Russia 686
—Servia 686
—Spain 686
—Switzerland 686
—Turkey 31, 665, 667, 668
—U. S.....687, 691, 709–723
——Jabez Burns' method.... 712
—Vienna 670, 671, 672
Brewing process
—Goldsworthy's (1920) 702
Brews, Composition of 721
Brief and merry history of England, q..... 77
Brief description, etc., *A, pamph., ill*.....70, 71
Briggs, James H..... 477
Briggs & Meehan..... 477
Brillat-Savarin....565; *q.* 557, 697
Brisbane, *v*..... 316
British E. India Co.....75, 82, 106, 601
British Pharmaceut. Codex, q. 183
Broadbent, Humphrey, *q*..293, 618, 697
Broadhurst, (tenor)..... 582
Broadside Against C., A; or, the Marriage of the Turk, q. ill.....69, 70
Broadsides and pamphlets..58, 60, 61, 64, 66, 68, 69, 71, 72, 432, 433, 434
Brock, J..... 503
Brokers
—Abyssinia 308, 310
—Arabia 310, 312
—New York.....336, 337
—(*See also* Dealers, wholesale).
Bronson, Jr., A. E. *pat*..... 647
Bronson, Zenos, *pat*..... 245
Bronson-Walton Co..... 647
Brougier, *pat*..... 167
Brown, Agnes..... 526
Brown, Arthur W..... 482
Brown, James..... 497
Brown, Tom, *q*.....75, 572, 574
Brown & Jones..... 497
Brown & Scott.....497, 499
Brownejohn, William, *chk*.... 118
Browning, Charles H. *q*..... 126
Bruce, James, *q*..... 693
Bruckman & Co., L..... 496
"Bruderherz" (Kolschitsky)... 51
Bruff, Sr., Thomas, *pat*...468, 621
Brûleau, Café..... 106
Bruning, Willam H., *pat*..... 653
Bruno, Bishop Joachim..... 9
Bubonic-plague boom (1899-1901) 529
Bucararamangas (c.) 348, 364
Buck, John H., *q*..... 607
Buckeye (brand)..... 470
Buc'hoz, Pierre Joseph, *q*..... 708
Budan, Baba 5, 225
Budenbach, T. O..... 497
Budgell 576, 578
Buds, beverage from 694
Buffon 98
Buitzenzorg c.....355, 373
Bukabensis, C..... 146
Bulfinch, Charles 113
Bullard & Co., C. G..... 485
Bullata, C., hyb..... 140
Bulson, A. E. J., *q*..... 182
Bun 1, 3, 12
Bun safi (cleaned beans)..... 266
Buna 41
Bunca 12, 25
Buncha 12
Bunchum 11, 12, 25
Bunchy 38

Bunge, Edouard 532, 534
Bunn 3, 12, 17, 35
Bunn, El..... 662
Bunnu 25, 38
Burbank, Luther 161
Bureaus
—Bus. research (see Harvard)
—Chemistry, U. S..... 144
Burke, Edmund 81, 574
Burke, Richard.....573, 574
Burman, *q*..... 183
Burmester, H. W..... 488
Burn, J. H., *q*..... 62
Burns, A. Lincoln...526, 527; *q*. 391, 394
Burns, George, *chk*..... 121
Burns, Henry 508
Burns, Jabez..494, 496, 630; *biog*. 517, 526; *d*. (1888) 526, 637; *pat*. 469, 634, 644, 645; *q*. 634, 635, 636, 637, 712
—Starts *Spice Mill, per*..... 470
Burns, Jabez (Mrs.)..... 526
Burns, Jr., Jabez.....526, 527
Burns, Robert...526, 527; *pat*. 647, 652
Burns, William G...526, 527; *pat*. 652, 653
Burns & Brown 495
Burns & Sons, Inc., Jabez.... 526
Burr, Aaron 123
Burstone mills 637
Burton, Robert...543, 557; *q*. 13, 38
Bush Terminal Stores, *ill*.... 322
Bute, Lord..... 572
Butler, Dr., *q*..... 179
Butler, Earhart & Co.....469, 508
Butler, Crawford & Co..... 508
Button, *chk*.....575, 578
Buying,
—Abyssinia 308, 310
—Arabia 310, 312
—Brazil 303-308
—Netherlands E. Indies..... 312
Buying and selling green c. 303–312
Byerly, Thomas..... 585
Byerley, Sir John..... 585

Cabarets à caffe..... 33
—(*See also* Coffee houses)
Cabarrus, E. T..... 538
Cable-break panic (1884)..... 528
Cadwallader, *pseud* 581
Café
—à la crème 708
—à la minute 708
—au lait 691, 696
—avec beurre 683
—bonifieur (Guadeloupe)..... 257
—bruleau 106
—complet 683
—con léche..... 691
—de luxe (Guadeloupe)..... 257
—en parché (Guadeloupe) ... 257
—en pergamino (grade) 261
—filtré 675
—gloria 683
—mazagran 92, 655, 682
—melangé 671
—nature 683
—sultan 658
—sultane 694
Café, The, per..... 34
Café, literary, artistic, and commercial, The, per (French) 34
Cafétier et le Café, Le, Jardin, *ill, q*. 2, 6, 14, 31, 32, 33, 629
Cafés
—Berlin
——Admiral's 684
——Bauer, *ill*..... 684
——Des Westens..... 684
——"Groessenwahn" 684
——Josty's 684
——Kranzler's, *ill*..... 684
——Victoria 684
—Hague, The
——St. Joris 686
—London
——Gatti's, *ill*.....675, 677
——Kardomah (chain) 675
Cafés (*cont'd*)
——London Café Co..... 674
——Monico, *ill*.....675, 677
——Nero 674
——Pioneer 677
——Popular 675, 677
——Ritz 678
——Trocadero 675
—Naples
——Toledo 686
—New York
——Fleischmann's 690
—Paris
——Paix, de la..... 683
——Prévost 683
——Régence, de la..... 683
—Venice,
——Florian's 686
—(*See also* Coffee houses; Hotels; Restaurants; Taverns)
Cafés chantants (*see* Coffee houses)
Caffè 3
Caffè, Il Belli 549
Caffè, Il (almanac, 1829)... 558
Caffè, Il per (1764-66)...30, 558
Caffè, Il per (1850-52)..... 558
Caffè, Il per (1884-89)..... 558
Caffè Pedrocchi, Il per (1885) 558
Caffearine 159
Caffein 159, 161, 162, 166, 167, 175, 176, 179, 182, 437, 711, 718, 721
—Analyses for..... 172
—Chaff contains..... 708
—Harmless in moderation.... 717
—Hollingworth's experiments 187, 188
—Loss in roasting..... 167
—Physiological action 183-188
Robusta, C. 145
—Solubility 160
Caffein content (*C. arabica*).. 161
Caffein-free c. *ill*.....142, 404
—Artificial.....161, 162, 163, 721
—Natural 161, 162, 721
——Varieties 147
Caffetannic acid..158, 159, 166, 174, 721
—Analysis for 173
—Lead number 514
—Misnomer 716, 718, 719
—Physiological action 182
Caffinets (*see* Coffee houses)
Caffeol 163, 164, 719, 720
—Physiological action..... 183
Caffeone 163
Cage, R. H..... 505
Cage & Drew..... 505
Cage, Drew & Co., Ltd..... 505
Cahoa 1, 2
Cahouah 15
Cahove 91
Cahua 1, 38
Cahue 1, 2
Cahve 31
Cahwa 45
Caleb, Negus 5
Calkin, Benjamin H. *pat*...652, 702
Calorific value of c..... 180
Calvados 682
Campaigning with Grant, Porter, *q*..... 563
Campbell (chemist) *q*..... 163
Campbell, *chk*..... 576
Campbell, Charles 482
Campbell's *Lives of the Lord Chancellors, q*..... 570
Campen, Christopher, *q*..... 12
Canadian Bank of Commerce.. 488
Canby, Edward..... 509
Canby, Frank L..... 509
Canby, Ach & Canby.....508, 509
Candle, Sales by 571
Canephora, C
—Botanical description..... 145
—Caffein content..... 161
—Ceylon 236
—Java 216
—Varieties 146
Cannon & Co., F..... 485
Canova 28, 29
Cans (*see* Containers).
Cantatas
—Bach's, *q, ill*. 595–599
—Fuzelier's, music by Bernier, *q*. 594
Cantino, Cesare..... 549
Caouhe 2
Caova 2, 26, 41
Caphe 1, 38
Capodimonte c.-pot 607
Capitazias 306
—(*See* Port-handling charges)
Capuchin, Café..... 683
Caracanda Frères..... 338
Caracas c.....348, 364
Caracol (grade) 261
Caracollilo (grade)..... 264
Caramel in c..... 718
Carazo, Padre..... 225
Carbohydrates 165
Cardamom in c.....657, 696, 709
Caret, *q*..... 555
Carey 80, 576
Carey & Co..... 480
Cargoes
—Damaged 321, 322
—Record (Brazil to U. S.).315, 316
Carhart & Bro..... 482
Carit & Co., S. A..... 487
Carjat 103
Carmen Caffaeum, Massieu, *q*. 543–547
Carne, John, *q*.....668–670
Carnegie, Andrew..... 521
Carpenter, Samuel..... 126
Carr, Chase & Raymond..... 501
Carret & Co., J. E..... 340
Carruthers 549
Carson & Co., W. K..... 485
Carte, D'Oyly..... 678
Carter, James, *pat*..... 469
Carter, James W....494; *pat*., *q*. 629
Carter Bros. & Co..... 507
Carter, Macy & Co..... 480
Carter, Mann & Co..... 501
Cartons (*see* Containers).
Casanas, Ben. C.....505, 513, 535; *q*. 415
Case, Howard E..... 496
Caseneuve, *pat*.....623, 699
Casilla (grade) 261
Castel, *q*..... 548
Castle Bros..... 488
Caswell, George W.....505, 506
Caswell Co., George W..... 506
Catalog, Hudson-Fulton Celebration, q.....607, 609
Catalogue of the Rarities to be seen at Adam's..... 559
Catalogue of Traders' Tokens, Burn, *q*..... 62
Catch crops..... 203
Cauchois, Frederick A....498, 701; *pat*, 472, 645, 649, 651
Cauphe 38
Cavanaugh, Rearuck & Co.... 502
Cave 31
Caveah 2
Cavee 26
Cavekane 32
Cazeneuve, *q*..... 159
Celebes c.....355, 374
Centlivre, Susannah, *q*..... 554
Central American coffee
—San Francisco's fight for trade 489–491
Central Americans (c.)...347, 359–361
Certified Java and Mocha (brand) 524
Ceylons (c.) 351, 352, 370
Chaa (tea)..... 35
Chabert, Josephine..... 518
Chabraeus 543
Chaff
—Removal deprecated..... 714
—Rich in caffein and aroma.. 708
Chain-stores 415, 417, 418
Chamber of Commerce (New York) 119, 120
Chamberlain, George A., *q*.. 563
Chamberlain, Orville W., *pat*.. 652
Chamberlaine, John, *q*..... 432
Champmeslé 91
Champney, Elizabeth W., *q*... 563

Chaouah 1, 2, 35
Chaova 41
Chapin, Harold.....556, 563
Chapman, D. J..... 501
Chapman, J. W., *pat*..... 649
Character of a coffee house, The (broadside) *q*....66-68
Characteristics
--Complete reference table.358–378
—Governing influences..... 156
—Green and roasted.....341–378
—Leading growths (chart)... 191
Charcoal, C. classed as..... 20
Charles II...20, 41, 59, 71, 72, 74, 82, 109, 554
—Proclamation against c. houses 73
Charlet 593
Chase, Caleb..... 501
Chase & Co., Geo. C..... 499
Chase & Sanborn....435, 470, 471, 485, 498, 501
Chase, Raymond & Ayer..... 501
Chatfield-Taylor, H. C., *q*..... 556
Chatterton, Thomas....80, 85, 88
Chattopádhyáya Virendranath *q*. 1, 2
Chaube 2, 25, 41
Checking the roast.....387, 391
Cheek, Joel O.....509, 513, 515
Cheek-Neal Coffee Co.....443, 509
Cheek, Norton & Neal..... 509
Cheetham, Jr., William H... 501
Chelsea bunhouse (London).. 560
Chemical analysis
—Bean 171-173
—Beverage 714
Chemistry 155–173
—U. S. Bureau of...338, 391, 396
Cheribon c.....355, 373
Chess in c. houses....96, 98, 104
Chesterfield, Lord..... 576
Chesterton, Gilbert K..... 553
Chestnut, *q*..... 155
Chevalier, Aug..... 142
Cheyne, George, *q*..... 59
Chiapas c.....345, 358
Chibouk 663
Chicago Liquid Sack Co..... 471
Chicago Theatre Society..... 555
Chicory
—Botanical description..... 170
—Chemical analysis..... 170
— Extracts of c., use in.... 169
—First use (Holland, 1750).. 170
—Introduced into U. S. (1785) 468
—Microscopic exam. 152, 153
—Substitute for c..... 46
Chicory in coffee..... 404
—France 678
—Great Britain..... 673
—Paris and Vienna.....670, 671
—Scandinavia 686
Children, effect on 177, 178
Childs (grocer, St. Louis).... 631
China & Java Export Co..... 488
Chlorogenic acid.....718, 719
Choate, Joseph H..... 690
Chocolate
—Discovery of..... 12
— Introduction into North Am. 106
—Prices, London (1662)..... 59
—Sold in London (1657)..... 56
—Sold in London c. houses 41, 61, 78, 80
Chocolate Cream (brand).... 441
Chocolate houses (*see* Coffee houses)
Chocolate pots..... 609
Cholera, effect on..... 181
Chops
—Brazil 306
—New York..... 321
Chrestomathie Arabe, de Sacy, *q*. 2, 17, 663
Christian beverage..... 26
Chronology, A coffee.....725–737
Chubuck & Saunders..... 508
Churchill 579, 580
Churchill & Co., Frederick A.. 502
Cibber, Colley.....579; *q*. 575, 577
Cinnamon in c.....105, 696, 709
Cinnamon roast..... 388
Cincinnati, Society of the.... 120
Cincinnati Spice Mills..... 503
Cipriani 84, 583
City, The, *q*..... 86
City Coffee Works..... 492
City Directory, New York (1848, 1854), *q*..... 494
—(1861) *q*..... 496
City Dock Co. (Santos, Brazil) 303
City roast 388
Clarification 704, 705
Clark, Ammi, *pat*..... 625
Clark, Charles A.....506, 514
Clark & Host Co..... 506
Clarke Bros. & Co..... 508
Clay bowls 616
Cleaning machinery..246, 248, 257, 383, 385
—Hungerford's patents 644
Clearing Ass'n, N. Y. Exch.331, 335
Clearwater, Judge..... 609
Clement VIII, Pope..... 26
Climate, Best for c..... 198
Closset, Emile..... 507
Closset, Joseph.....507
Closset & Devers..... 507
Closset Bros..... 507
Cloves in c.....696, 709
Clubs
—Boston
——First 111
——Merchants' 111
—London
——Court de Bone Compagnie 60
——Evolution of..... 75
——Hanover 577
——Literary 583
—London coffee-house,
—— Bread Street 60
——Devil Tavern..... 60
——Friday Street..... 60
——Mermaid Tavern..... 60
——Rota 59, 60, 583
——Turk's Head..... 81
——Turk's Head Society..... 583
——White's 87
—New York,
——Coffee House..... 690
——South America..... 690
—Phila., supersede c. houses.. 130
Clubs and Club Life in London, Timbs, *q*.....570-585
Coal roasting.....385, 386
Coarse (*see* Grinds).
Coated c. Rulings (U. S.) against 337
Coatepec c.....345, 358
Coating 166, 396
—Condemned by N. C. R. A.. 513
—Reasons for..... 170
Coatzacoalcos c.....345, 358
Coava 36
Cobans (c.).....347, 359
Cobbett, William, *q*.....561, 562
Cochrane, *q*..... 185
Cocoa, first used in Europe... 25
Coffa 2, 36, 38
Coffalic acid 719
Coffao 2
Coffe 2
Coffee, Keable, *q*.....181, 182
Coffee, A short historical account of, Bradley..... 42
Coffee and Repartee, Bangs, *q* 564, 565
Coffee Book, The, *q*..... 714
Coffee cantata, Bach..... 46
Coffee Club (U. S.)..... 453
Coffee Club, The, per., *q*..... 177
Coffee from Plantation to Cup, Thurber, *q*.....182, 712
Coffee Grinding and Brewing, N. C. R. A..... 715
Coffee house, most beautiful... 599
Coffee house, The (comedy) Rosseau 88
Coffee house, The new and curious, per..... 45
Coffee house or newsmongers' hall, (broadside)....68, 69
Coffee-house keepers, London
--Proposed newspaper monopoly 74
--Tokens, *ill*...56, 62, 74, 89, 582, 602, 603
Coffee houses 293
---Advantages 72
(Coffee houses (*cont'd*)
—Algeria 656
—Arabia 658
—Augsburg, first (1713)..... 45
—Berlin
——Arnoldi 45
——City of Rome..... 45
——English 45
——Falck's (Jewish)..... 45
——First (1721) 45
——Miercke 45
——Royal 45
——Schmidt 45
——Widow Doebbert's 45
—Boston 108–113
——American 108, 111
——Auctions held in..... 112
——British 108
——Crown, *ill*..... 108
——Exchange 112, 113
——First 108
——Green Dragon, *ill*....109, 110, 111
——Gutteridge 108
——London 108, 116, 467
——North-End 112
——Royal Exchange..... 112
——Stage coaches start from 110. 112
——Washington 110
—Brazil 691
—Cairo, number (17th century) 26
—Chicago
——Exchange 106
——Lake Street..... 106
——Washington 106
—Constantinople 663–667
——Prices (1554)..... 19
—Damascus 668–670
——First 19
——Gate of Salvation..... 19
——Roses 19
—Egypt 656, 657
—England
——First (1650).....41, 53
——Decline 75
——Ordered suppressed...72, 73
——Proclamation by Charles II 73
——Proclamation rescinded.. 73
—Europe, first..... 27
—Exeter (Devon)
——Mol's 42
—France 33, 682, 684
—Germany 683, 684
——First (1675)..... 45
—Hamburg, first (1675)..... 45
—Italy 27, 28
——First 27, 686
—Leipzig, first (1694)..... 45
—London 53-89
——Adam's (and museum)... 559, 560
——Baker's 87
——Baltic 87
——Batson's 78
——Bedford 80, 84, 88, 576, 579, 580
——Blue Hall..... 575
——Bowman's 83
——British, *ill*.....79, 86
——Button's, *ill*.....80, 81, 83, 84, 570, 575, 576, 577, 578, 579, 593
——Caledonien, *ill*.....84, 593
——Chapter 78, 80, 88, 582
——Child's 78, 88, 560, 582
——Cocoa-Tree ...78, 79, 87, 560
——Decline of....61, 62, 81, 82, 674, 675
——Dick's, *ill*....87, 88, 555, 572
——Dish of Coffee Boy, *ill*... 603
——Don Saltero's, *ill*..80, 86, 88, 558
——Museum 559
——Edinburgh Castle..... 75
——Farr's 54
——Fire of 1666.....61, 62
——First (1652)..42, 53, 54, 293
——Folly (house-boat)..... 89
——Garraway's (or Garway's) *ill*. 56, 77, 80, 83, 561, 570, 571, 572
——Gaunt's 588

Coffee houses (*cont'd*)
—London
——George's 584, 585
——Giles's 560
——Grecian, *ill*...61, 77, 80, 85, 560, 584
——Groom's 572
——Hamlin's 78
——Jacob's 42
——Jamaica 83
——Jenny Man's 560
——Jerusalem 88
——Joe's 571
——Jonathan's..88, 554, 560, 572
——Little Man's 79, 88
——Lloyd's, *ill*....75, 80, 85, 572
——London 88, 582
——Man's 61, 88
——Miles's 583
——Nando's 80, 88, 572, 585
——New England and North and South American..... 88
——New Lloyd's..... 86
——New Man's..... 88
——New Slaughter's..... 84
——News centers, use as.... 77
——North's 78
——Number (1715)..... 74
——Old Man's.....77, 79, 88
——Old Slaughter's..... 84
——"On the Pavement"..... 583
——Rosée's 42
——Peele's 80, 88, 585
——"Penny universities" 3
——Percy 89, 585
——Piazza 80, 89, 581
——Piazza coffee room...580, 581
——Rainbow 62, 77, 89, 572
——Read's 74
——Red Cow 83, 574
——Robins's 63
——Robinson's 570
——Rochford's, Mrs..... 79
——Rose 84, 574
——Royal Swan (and museum) 559
——Second 54
——Shakespeare 84
——Slaughter's, *ill*....80, 84, 85, 580, 583, 584, 593
——Smyrna 79, 80, 89, 573
——Squire's 86
——St. James's...75, 78, 79, 80, 88, 558, 560, 562, 573, 574, 588
——Stone's 675
——Thomas's 84
——Tiltyard 78
——Tom King's.....89, 581
——Tom's, *ill*....80, 85, 575, 576, 579, 580, 593
——Turk's Head.....56, 59, 80, 81, 89, 582, 583
——Turk's Head, Canada and Bath 583
——Virginia 83
——Welch (Daniels)..... 78
——White's *ill*.....79, 87, 558, 587, 588
——Burned (1733)..... 587
——Widow Hambledon's..... 575
——Williams's 78
——Will's 77, 79, 80, 83, 558, 560, 574, 575, 588
——Young Man's.....78, 79, 88
—Marseilles, first (1671).... 32
—Mecca
——Opposition 17
——Relicensed 18
—Milan
——Demetrio 30
—Netherlands 44, 686
—New England.....107–113
—New Orleans..... 106
—New York.....115–124
——Auctions held at..... 118
——Bank 121, 124
——Burns, *ill*.....117, 121
——City 119
——Civic forums, use as..115, 117, 118, 120
——Directory, use as..... 120
——Double R..... 690
——Exchange 118, 119
——Exchange coffee room.... 120
——Exchanges, use as....117, 118, 119, 120, 123
——First (1696)..... 116
——Decline 123
——Gentlemen's Exchange... 118
——Keen and Lightfoot's.... 120
——King's Arms, *ill*.....116, 117, 118, 121, 467
——Merchants, *ill*...115, 118, 119, 122, 123, 593
——Birthplace of Union (1774) 474
——Congress of Deputies Suggested 120
——Memorial tablet (1914) 473, 474
——Organizations meeting therein 120
——New 117, 118
——New England and Quebec, 121
——New York..... 120
——Pequot 611
——Social centers, use as.... 115
——Tontine, *ill*.....120, 121, 123, 593
——Whitehall 121
—Nuremburg, first (1696).... 45
—Oxford
——Jacob's 41, 53
——Jobson's 41
——Tillyard's 41
—Padua: Pedrocchi, *ill*.29, 30, 599
—Paris 91–104
——Alcazar d'Hiver..... 98
——Anglais 103
——Bonnard's 98
——Beauvilliers' 102
——Chartres 102
——Chat Noir..... 104
——Concert du XIX Siécle... 98
——Concert Européen..... 98
——Des Mille Collonnes, *ill*... 99
——Development of.....94, 96
——Durand 104
——Dutch 103
——Eldorado 98
——English 103
——Fevrier's 102
——First (1672).....291, 670
——Folies Bobino..... 98
——Foy, *ill*.....97, 100
——Gaieté 98
——Grand Commun 102
——Gregory's 93
——Guerbois 104
——Laurent 103, 554
——Lefévre's 96
——Le Gantois's 93
——Littéraire 103
——Madrid 103
——Magny's 94, 96, 102
——Maire's 103
——Maison Dorée..... 103
——Makara's 93
——Malliban's 93
——Mapinot 102
——Massé's 102
——Méot's 102
——Momus 100
——Number of..... 93
——(1843) 94
——Paix, de la..... 103
——Pascal's (Fair of St. Germain) 33, 92
——Paris, *ill*.....101, 103
——Procope, *ill*...94, 95, 98, 566
——Rambuteau 98
——Régence 96, 98
——Riche 103, 104
——Rocher de Cancale..... 104
——Rotonde 100, 102
——Royal Drummer, *ill*..... 94
——Stephen's 93
——Terre's 103
——Tortoni 103
——Tour d'Argent..... 94
——Trois Frères Provençaux, 102
——Vachette 102
——Venua's 102
——Véry 102
——Voisin 103
—Persia 21
—Philadelphia 125–130
——Decline of..... 130
——Exchange (proposed).... 130
——Scene from *Hamilton*, *ill.* 556
——Exchanges, use as..... 128
——First (1700)..... 126
——James 127
——London, *ill*.....125, 126
——Slave auctions, *ill*..... 128
——Sunday closing..... 129
——Swearing, gaming, etc., prohibited 128
——London (2nd), *ill*..... 127
——Merchants 125, 129, 130
——Roberts' 127
——Social centers, use as.125, 130
——Ye coffee house..125, 126, 467
——Post-office, use as..... 126
—Portugal 686
—Regensburg: first (1689)... 45
—Santo Domingo, first (1738) 34
—Spain 686
—St. Louis: Leonhard's..... 105
—Stuttgart: first (1712)..... 45
—Turkey 32, 663–670
——Closed 20
——Reopened 21
—United States (1700)..... 708
—Venice
——Abbondanza 28
——Angelo Custode..... 28
——Arabo-Piastrelle 28
——Arco Celeste..... 28
——Aurora Piante d'oro..... 28
——Buon genio-Doge..... 28
——Coraggio-Speranza..... 28
——Dame Venete..... 28
——Ducca di Toscana..... 28
——Florian, *ill*....27, 28, 29, 555
——Fontane di Diana..... 28
——Imperatore Imperatrice della Russia..... 28
——Menegazzo 28
——Orfeo 28
——Pace 28
—— Pitt, l'eroe..... 28
——Ponte dell' Angelo..... 27
——Quadri 28
——Redentore 28
——Re di Francia..... 28
——Regina d'Ungheria..... 28
——Spaderia 27
——Tamerlano 28
——Venezia trionfante..... 28
—Vienna 671, 672
——Blue Bottle.....50, 590
——First 51, 590
——Kolschitzky's 50
——Mosee's, Franz..... 51
——Number of (1839)..... 52
——Sacher 50
——Schrangl 671
Coffee houses vindicated, pamph, q.....71, 72
Coffee, Its History, Cultivation and Uses, Hewitt..... 480
Coffee kings
—First (Germany)..... 47
——(U. S.)..... 517
—Last (U. S.)..... 518
Coffee-makers' guild of Vienna. 51
Coffee man's granado, The (Broadside) 66
Coffee palaces (*see* Coffee houses)
Coffee Pep (brand)..... 539
Coffee pots (*see* Service)
Coffee Roaster & Mill Mfg. Co., 497
Coffee Roasters Traffic and Pure Food Association..... 473
Coffee rooms (Norway)..... 686
Coffee scuffle, The (broadside) *q*. 64
Coffee shops (houses), London, 674
Coffee-smellers (Germany).... 47
Coffee, tea, and chocolate, Concerning the use of, Dufour, 34
Coffee, tea, and chocolate, The manner of making, Dufour, 34
Coffee tree, Kentucky..... 564
Coffee water (rosa-folis)..... 695
Coffey 41
Coffi 2
Cognac in c.....106, 686
Cogollo & Co..... 340

Coho 1, 2, 38
Cohoo 2
Cohove 91
Cohu 2
Coit & Son, Henry..... 476
Coke roasting.....385, 386
Colaux & Cie, *pat*..... 625
Cole & Son, Stephen..... 476
Coles Manufacturing Co...472, 646
Colet, M. H., *q*..... 594
Colgate, Charles C..... 492
Colgate, Samuel..... 492
Collection of Voyages and Travels, A, q..... 23
Collins, William..... 580
Coloring substances..... 170
Colombians (c.)..348-350, 363, 364
Colpani 558
Columbia University..... 186
Columbian Centinel, newsp. q.. 434
Columnaris, C., hyb..... 140
Comité Français du Café..... 445
Commaille, *q*..... 165
Commercial Ass'n, Santos..... 314
Commercial coffee chart..... 191
Commercial Coffee Co..... 478
Commercial Organic Analysis, q..... 159
Commissario 303, 304, 305, 306, 312, 491
Commissions
—New York.....334, 336
—Santos 304
Committee of Correspondence 120, 474
Committee of One Hundred (1774) 120
Commonwealth and c.....54, 59
Competition, retail..... 426
Complet, Café 683
Compton (Bishop of London). 570
Condorcet 94
Confectionery, C..... 695
Confessions, Rousseau..... 102
Congensis, C..... 147
Congensis var. Chalotii..... 147
Congensis x *Ugandae, hyb*..... 146
Congo, Belgian, c.....353, 377
Congo coffee, caffein content.. 161
Congress of Deputies..... 120
Conkling & Lloyd..... 476
Con léche, Café..... 691
Connoisseur (London) *per, q*. 579
Conoplos, Nathaniel....40, 41, 43
Conquest of Granada, Dryden's (censured by Rota)..... 60
Conrad & Co., J. H..... 502
Consolidated Coffee Co..... 508
Consortium of 1868..... 476
Constantine, George, *chk*. 61, 84, 584
—(*See* Jennings, George)
Constantinople, Illustrated, Walsh, *q*.....663, 664
Constantinople in 1657, *Relation of a Journey to*, Rolamb, *q*..... 23
Constantinople, Old and New, Dwight, *q*.....664-667
Constituents of c., Valuable... 693
Constitutional Antiquities of Sparta and Athens, Gilbert, *q*..... 40
Consumo (grade)..... 261
Consumption 285-302
—Argentina ...279, 286, 287, 291
—Australia 286, 287, 291
—Balkan States..... 290
—Belgium 285, 287
—Canada 286, 287
—Chile 286, 287, 291
—Colombia 278
—Cuba 286, 287, 291
—Denmark 287, 290
—Europe (19th Century)..295, 296
—Federated Malay States..... 284
—France 285, 287, 290
——Average annual..... 678
—Germany 285, 287, 290
—Great Britain.....285, 287
—Guiana, French..... 279
—Italy 285, 287, 290
—Mexico 280
—Netherlands 285, 287, 290
—New Zealand.....285, 287, 291
Consumption (*cont'd*)
—Norway 287, 290
—Peru 278
—Portugal (1919)..... 290
—Russia 285, 287, 291
—Salvador 280
—San Francisco..... 487
—Scandinavia 285, 290
—Spain 285, 287, 290
—Sweden 287, 290
—Switzerland ..285, 287, 290, 291
—Table of World..... 287
—Tea and c. comparisons.288, 289
—Union of South Africa..286, 287, 291
—United States.....106, 285, 287, 288, 293, 294
——Popularity explained.... 106
——Prohibition; effect on.... 689
——World-war; effect on.... 297
—Venezuela 278
Consumption per capita
—Foreign countries.....288-290
—Groix, Island of..... 176
—Tables 288
—United States.....298, 299, 476
——Methods of computing... 302
Containers 402-404, 408-412, 470, 471
—First paper and tin-end..... 471
—First strawboard (1881)... 471
—Leather bags, greased (1710) 620
—Pots of various sizes (1790) 491, 492
—Standardizing 410
—Vacuum 471
Conti, Prince de..... 590
Contracts 329, 331
—Cost-and-freight 513, 515
—In-store 331
—N. Y. Exchange.....333-335
—To arrive..... 335
Controversies
—England 64-74
—Commercial, U. S..... 438
—Medical, Eng.....58, 59
—Political, Eng. (1666-72) 72, 73, 76
—(*See also* Opposition; Coffee houses)
Conway, Charles..... 499
Cooling 381, 636, 641
Cooling machinery.....394, 395
Cooling machines
—Burns's flexible-arm....652, 653
—Emmerich automatic (1897), 639
—German patents (1877-85).. 638
—Grohens's rotary..... 646
Cook, O. F., *q*.....202, 223
Cooper, Charles, *q*..... 675
Cooper, Cornelius..... 492
Cooper, L. S..... 495
Cooper & Co., Nathaniel..... 476
Coorg c.....351, 379
Copha 1, 2, 38
Cophie 56, 58
Cophy 56
Coppée, François..... 565
Cordoba c.....347, 358
Corinchies c.....355, 371
Corner in Coffee, The, Brady.. 563
Corners
—Arnold's (1869-1881)...517, 518
—Blanco's (1895)..... 529
—Kaltenbach's (1891-92).476, 529
—United States (1901)..... 530
Cornpoppers for roasting..... 635
Correa & Sons, F. A..... 338
Corbett, Barney..... 503
Corbett & Heekin..... 503
Corbin, May & Co..... 485
Corinna (Mrs. E. Thomas).... 575
Cornell & Smith..... 508
Cost card for roasters..... 392
Cost analysis.....407, 408
—Retail 418
Cost and freight brokers..336, 337
Cost and profits, retail....426, 427
—Chart 428
Costa Ricas (c.).....348, 361
Coste, Felix.....448, 457, 514
Cotovicus .....32, 696; *q*... 20
Cottraux, E. P..... 505
Cottrell 496
Couba 2
Couguet, Dr A., *q*..... 26
Coventry, Sir William, *q*..... 72
Cowhe 2
Cowha 2
Cowper, William ....88, 557; *q*. 550, 572
Cradle of Am. liberty..... 293
Cramer, P. J. S., *q*...135, 138, 140, 142, 144, 146, 147, 345
Crampton, G. E..... 501
Crawford, Thomas A..... 505
Crawley, Edwin, *pat*..... 642
Cream in c.....399, 698
Crébilon 94
Credit policy, retail.....428, 429
Creighton, Clarence..... 477
Creighton & Ashland..... 477
Creighton, Morrison & Meehan, 477
Creme, Café à la..... 708
Crepaux 708
Cripps, *q*..... 602
Crispe, Sir Nicholas..... 54
Crocker, Nathaniel..... 508
Cromwell, Henry..... 575
Cromwell, Oliver..... 72
Crooks & Co., Robert..... 485
Crooks & Co., Samuel..... 501
Cross & Co., C. A..... 642
Crossman, George W..482, 518, 519
Crossman, W. H.....482, 518, 519
Crossman & Bro., W. H....482, 484, 518, 530
Crossman & Sielcken..482, 519, 521
Crossman-Sielcken contract... 519
Crouse & Co., Jacob..... 508
Cruger, Henry..... 475
Cruger, John..... 475
Crusade (brand)..... 435
Cubans (c.).....351, 361
Cucuras (c.).....348, 349, 364
Cuchaletto (chocolate)..... 107
—Sold in Boston (1670)..... 107
Culapius, S. *pseud*, *q*..... 181
Culbreth, *q*..... 181
Cultivation 197-243
—Crop maturity..... 138
—Early 197
——Spread of.....5, 6, 7, 8, 9
—(*see also* Propagation)
Cultivation (geographical)
—Abyssinia 1
—Africa, British Central..... 9
—Africa, British East..... 9
—Amazonas (began 1752)..... 9
—Angola 229
—Arabia 2, 5, 230, 231
——Began (A. D. 575)....5, 230
—Argentina 236
—Australia 9, 238, 239
—Bolivia 236
—Bourbon (Réunion)..... 9
—Brazil 9, 74, 75 204-208, 275
——Profits (1900)..... 205
—California, Southern..... 9
—Celebes (began 1750).9, 217, 283
—Ceylon 236, 237
——Begun by Arabs (before 1505) 6, 43
——Begun by Dutch (1658), 6, 43
——Systematic (1690)..... 282
—Colombia 208-212
—Costa Rica.....9, 135, 225, 280
—Cuba 9, 231, 232
—Dominican Republic..... 232
—Ecuador 236
—Federated Malay States.... 238
—Fiji Islands..... 243
—France 6
—Guadeloupe 233, 234
—Guam 242, 243
—Guatemala 9, 135, 219, 220
—Guiana, British....235, 236, 279
—Guiana, Dutch....235, 236, 279
—Guiana, French.....235, 236
—Haiti 9, 220
—Hawaii 9, 239, 241
—Honduras 234
—Honduras, British.....234, 235
—Indo-China, French.....9, 237
—India 5, 9, 225-227, 282
—Jamaica 9, 74, 233
—Java 9, 43, 74, 213, 293
—Liberia 230

Cultivation (*cont'd*)
—Martinique 6, 7, 8, 9, 233
—Mexico 9, 220, 221, 222, 280
——U. S. interest..... 221
—Netherlands 5, 6
—Netherlands E. Indies....6, 213-217, 283
—New Caledonia 243
—Nicaragua 227
—Panama 235
—Pará 9
—Paraguay 236
—Peru 236
—Philippines 9, 241, 242
—Porto Rico.....9, 222, 223, 225
—Queensland 9
—Rio de Janeiro..... 9
—Salvador 217, 219, 279
—Sānto Domingo 9
—São Paulo 205-208
—South America (first)..... 279
—Straits Settlements..... 238
—Sumatra 216, 217, 283
—Tahiti 243
—Tobago 234
—Tonkin 9
—Trinidad 234
—Uganda 230
—United States..... 9
—Venezuela 9, 212, 213, 277
—West Indies..... 9
—Western Hemisphere (first). 294
Cultured (brand)..... 474
Culver & Geiger..... 509
Cumberland, *q*.....573, 574
Cummings, W. A..... 496
Cunningham 583
Cup of c., or c. in its colours, A (broadside), *q*..... 64
Cup-testing 356, 357
—San Francisco.....487, 488
Curaçoa c 351, 363
Cure-all 58
Cure for drunkenness.....58, 61
Curiosities of Literature, D'Israeli, *a* 41
Curtis & Burnham..... 508
Curtis Publishing Co..... 441
Cushing, *q*..... 179
Customs and Fashions in Old New England, Earle, *q*.... 709
Custom-house procedure, New York 319
Cutler, Benjamin..... 492
Cuyler, Philip..... 475
C. W. (brand)..... 441
Cyrill, Patriarch.....40, 41

da Ponte, Lorenzo..... 28
Dagoty 589, 590
Dahlman, Henry..... 506
Dahlman, John..... 506
Daily Post (Lond.) *newsp. q*.. 588
Dakin, Elizabeth, *pat*..... 633
Dakin, William, *pat*..... 633
Dakin & Co..... 633
Dakotan, *v*..... 316
D'Alembert, *q*..... 3
Dally, Gifford..... 128
Dana, John Cotton, *q*..... 712
Dancourt, *q*..... 554
Daney, Sidney, *q*..... 8
Daniel, *chk*..... 78
Dannemiller, A. J., *q*..... 409
—Coffee-selling chart..... 409
Dannemillers & Co..... 484
Danton, George Jaques.....94, 98
Danvers' Letters, *q*..... 2
d'Argenson, De Voyer..... 594
Dark roast.....356, 387
Darouf (Arabian bale)..... 266
d'Arvieux, Chevalier, *q*..... 2
Dash, Bowie.....479, 497, 527
Dash, J. Bowie..... 497
Dash & Co., Bowie...469, 477, 528
Dater, Henry..... 482
Dater, Philip..... 482
Dater & Co., Philip..... 482
Dauchet 554
Daudet, Alphonse..... 103
Daughty, Charles, M., *q*....661-663
Daugleish, Dr..... 677
Dauphine of France..... 600
Davenant, Sir William.....80, 576
Davenport & Morris..... 485
David 18
Davies, Tom.....567, 568
Davies & Co., John L..... 502
Davies & Co., Ltd., Theo. H.... 488
Davis, S. L..... 499
Davis & Co., Noah..... 501
Dawson, August T., *q*.....711, 712
Dayton & Co..... 480
Dayton Spice Mills..... 443
Dayton Spice Mills Co..... 508
De Belloy, Jean Baptiste, *inv*.. 94, 621, 622, 697, 698
de Boze, *q*..... 543
de Bussy, Th. Roland, *q*..... 656
de Chirac..... 6
de Clieu, Mathieu Gabriel...6, 7, 8, 233, 550
—Memorial to..... 9
—Verses about..... 8
—Voyage to Martinique.....6, 7
De Constantinople à Bombay, Lettres, Della Valle, *q*.... 12
de Coverley, Sir Roger..... 86
De Fremery & Co..... 488
de Goncourt, Jules.....102, 103
de Gourcuff, O..... 557
de Jour, Rouillé..... 8
de Jussieu, Antoine..... 6
De la Café, de Gourcuff..... 557
de la Motte, Houdard..... 554
De Lancey house, New York... 121
de Lannay, Count..... 47
de Laval, Pyrard, *q*..... 2
de l'Ecluse, Charles..... 31
De Lessert & Co., J. S..... 476
De Lima, D. A..... 482
De Lima, D. A. & J..... 482
De Lima & Co., D. A..... 482
De Luxe, Café (Guadeloupe).. 257
de Mattel, Natale, *pat*..... 653
De Mattia, *pat*..... 166
De Mattia Bros..... 686
de Maupassant, Guy..... 565
de Mere, Mlle..... 91
de Monteith, Fulbert, *q*..... 22
de Musset, Alfred.....98, 102, 565; *q*. 103
de Noailles, Duke..... 567
de Nointel 542
De Quincey, Thomas, *q*..... 562
de Pompadour, *ill*.....588, 600
de Rabutin-Chantal, Marie.... 91
de Sacy, Baron Antoine Isaac Silvestre, 17; *q*.....2, 663
De Saluberrima Cahue seu Café, etc., Nairon..... 16
de Santais, Edward Loysel, *pat*. 629
De Sarlo, *q*..... 186
de Saxe, Marie-Josephe..... 600
de Sévigné, Madame.....91, 565
de Thévenot, Jean.....31, 91
de Tournemine..... 591
de Wildman, M. E., *q*..... 132
Dealers, Wholesale
—New Orleans.....486, 487
—New York.....475-482
Dearman, Richard, *pat*..... 621
Decaffeinated (*see* Caffein-free)
Declaration of Independence.. 111
Decoction defined..... 698
Decreuse 589
Deep Sea Hotel (Arbuckle's).. 524
Deer Co., A. J.....443, 472, 473, 643, 646
Defendorf, George..... 492
Deffes 594
Defoe, Daniel.....80; *q*. 78, 79
Dehio 186
del Castillo & Co., Rafael..... 340
Delafield, Henry..... 476
Delafield, William..... 476
Delille, Jacques, *q*..... 547
Dell, John C., *pat*..... 644
Della Valle, Pierre (Pietro) 543; *q*. 2, 12, 27
Delphine, Sr., *pat*..... 639
Demidoff, Prince..... 103
Democracy, Coffee and..20, 21, 54, 72, 75, 293
—Am. colonies..... 107
—Boston 111
—England 59
—France 100
—Italy 28
Demonstrations, etc., Store... 425
Dennis 575
Denobe, *pat*..... 621
Deodorant 58, 180
Department stores..... 415
Des Arts & Henser..... 476
Des Dames du Temps Jadis, Villon, *q*..... 135
Descamps 591
Desmoulins, Camille.....94, 100
Desserts, recipes.....723, 724
Destree, *q*..... 186
Desvignes, *pat*..... 157
Detroit Testing Laboratories.. 715
Developing point..... 389
Deverall, R.R. & A..... 501
Devers, A. H..... 507
Devereri, C..... 142
—Java 214
Diarrhea, effect of c. on..... 181
Diary, Jourdain, *q*..... 1
Diary and Correspondence, Evelyn, *q*..... 40
Dickinson, Gilchrist..... 476
Dictionary, d'Alembert, *q*..... 3
Dictionary, d'Arvieux, *q*..... 2
Dictionary of Applied Chemistry, *q*..... 164
Dictionary, New English, Murray, *q*..... 1
Dictionary, Universal, *q*..... 176
Diderot, Denis.....94; *q*. 96, 98
Dieckmann & Co..... 488
Diefenthaler, Charles E..... 497
Diefenthaler, T. F..... 497
Dietl 186
Dietz, F. C..... 508
Digestion, effect of c. on..175, 177, 178-180
Diligence (infusion device)... 620
Dilworth & Co., J. S..... 507
Dilworth Bros.....435, 507
Dimond & Gardes..... 482
Dimond & Lally.....480, 482
Direct-flame roasting.....386, 641
Discovery of c. (*see* Origin)
Diseases and pests...147, 148, 152, 203, 204
—C.-berry beetle..... 203
—C.-leaf miner.....147, 203
—Eel-worm disease..... 204
—Fungoid 147, 148, 203
—*Hemileia vastatrix*.....148, 152, 203
—Insects 203
—Leaf blight
——Ceylon 203, 236, 237, 282, 283
——Dominican Rep..... 281
——Hawaii (1855)..... 241
——India 226
——Philippines (1889)..... 242
—*Pellicularia tokeroya*..... 148
—Root disease.....148, 204
—*Sphaerostilbe flavida*..... 204
—Spot of leaf and fruit..... 148
D'Israeli, I.....557; *q*. 41, 53, 72, 91
Distillation devices
—Napier-List (1891)..... 639
—Napierian (1870)..... 639
—Napier's vacuum (1840).... 637
—Wyatt's patent (1802)..... 621
Ditson, Thomas, *pat*..... 245
Dittman, Charles..... 486
Dittman, Jr., Charles..... 487
Dittman Co., Chas.....486, 487
Divination by coffee grounds.. 558
Divorce, C. and..... 22
Doane & Co., J. W...482, 484, 485
Dolton & Co., Wm..... 508
Domestick Coffee Man, Broadbent, *q*.....293, 697
Dominguez, Andres..... 221
Donaldson 578
Donovan, Prof., *q*..... 704
Donmartin, *inv*.....620, 697
Donns, *q*..... 8
Doolittle, *q*..... 167
Doran, John, *q*..... 705
Dorn, R. H..... 505
Dorr, S. H..... 535
Dorsay, Benjamin..... 468
Dorset, Earl of..... 584
Double roasting..... 387

Douglas, James (Bishop of Salisbury) 42, 543, 574
Downer, Samuel A..... 502
Downer & Co.....501, 502
Downtown Association, New York 517
Drake, Samuel Gardner, *q.* 108, 116
Drake & Co., W. D..... 507
Dramatic Literature, C. in..554-556
Draper & Co., John H..... 482
Dressing machinery..... 245
Drew, J. C..... 505
Drink (*see* Beverage)
Drinksum (brand)..... 524
Droste, H. R..... 503
Drouais, Francois Hubert..589, 599
Drug stores, C. sold in..... 415
Drums (*see* Containers)
Drupes (*see also* Botany; Fruit) 136
Dry method.....136, 249, 251
Dry roast.....389, 391
Dryden, John...60, 77, 78, 80, 84, 574, 575, 583, 584
Drying 251
Drying grounds.....251, 254
Drying machinery.....254, 255
Du Barry, Madame, *ill.*...92, 563, 566, 588
Du Belloy, Archbishop..... 697
Du Mont..... 543
Du Tour, *q.*.....707, 708
Dubard, Prof., *q.*..... 147
Dublin Philosophical Journal, per., q...... 704
Ducis 548
Duehring, Carl H., *pat.*..... 642
Dufour, Philippe Sylvestre..34, 432, 543, 557; *q.* 2, 11, 13, 74, 98
Dugdale, E..... 470
Dumant, Pierre Etienne Louis, *q.* 13
Duncan, James, *q.*..... 59
Duncombe Mfg. Co., F. A..... 649
Dunham, Charles A..... 508
Dunks, John..... 118
Duparquet, L., *pat.*.....469, 639
Duparquet, Huot & Moneuse Co. 639, 644
Durand, Calvin..... 502
Durand, H. C..... 502
Durand, H. C. & C..... 502
Durand & Co..... 502
Durand & Kasper..... 502
Durand & Kasper Co..... 485
Durant, Nicholas Felix, *pat.* 625, 634, 699
Durieux, Elizabeth..... 178
Duryee, P. S., *q.*..... 420
Dutch (*see* Netherlands)
Dutch New York, Singleton, *q.* 105, 115, 125, 709
Duties, Export
—Angola 268
—São Paulo 315
Duties, Import
—Abyssinia 310
— Belgium, removed (1904)... 296
— England (1692, 1732)..... 74
—United States.....296, 468
———Porto Rico requests..... 472
———(*See also Chronology*)
Dwight, H. G., *q.*.....664-667
Dwinell, James F..... 501
Dwinell & Co..... 501
Dwinell, Hayward & Co..... 501
Dwinell, Wright & Co.....485, 501
Dwinell-Wright Co.....501, 629
Dybowski, C...... 144
—Java 216
Dybowski x *excelsa, hyb.*.... 146
Dyer & Co..... 501
Dykes & Wilson..... 480
Dymond & Gardes..... 486

Eagle Coffee and Spice Mills.. 503
Eagle Spice Co..... 507
Eagle Spice Mills..... 503
Eames, Wilberforce..... 474
Earle, Alice Morse, *q.*..... 709
Early History of Coffee Houses in England, The, Robinson, *q.*..... 11
East Indies (c.).....350, 370-374
Eating coffee...180, 615, 655, 693, 694
Eccles, William..... 475
Eckert, *q.*..... 164
Eckhardt, *pat.*..... 167
Ecuadors (c.).....350, 367
Eddy & Co., L. B..... 508
Eder, *q.*..... 179
Edmond 102
Edtbauer, P. E. (Mrs. E.) *pat.* 472
Educational exhibits..... 715
Edwards, Daniel.....53, 54, 459
Edwards, Hugh..... 482
Edwards, J. M..... 479
Edwards & Co., J. M..... 479
Edwards & Maddux..... 479
Edwards & Raworth..... 482
Edwards, Townsend & Co..... 507
Ekelund, Charles..... 509
Electric motors.....471, 646
Electric roasting..... 386
Electric Scale Co..... 471
Electric signs..... 443
Elephant (grade)..... 258
Elers 604, 612
Elford, *chk.*..... 83
Elford, *inv.*.....616, 617
Elford the younger, *q.*..... 61
"Elixir of life"..... 174
Elkington & Co. Ltd..637, 639, 699
Elliott, *chk.*..... 573
Ellis, Douglas..... 557
Ellis, H. D., *q.*.....602, 603, 604
Ellis Bros..... 485
Elmenhorst & Co..... 482
Ely & Co., D. J..... 480
Ely & Co., D. J. & Z. S..... 480
Emerson, E..... 501
Emerson, Edward R., *q.*..... 566
Emmerich Machine Factory and Iron Foundry, *pat.* 638, 639
Emo, Angelo..... 27
En pergamino (grade)..... 261
Encyclopedia, Diderot..... 98
*Encyclopedia Britannica, q..*11, 200, 657
Encyclopedia der Therapie, q.. 185
Encyclopedia of Domestic Economy, q...... 704
Encyclopedia of Practical Cookery, q...... 710
Engelberg, Evaristo C., *pat.*... 247
Engelberg, Huller Co.....247, 471
Engelhard, Albert..... 505
Engelhard, Jr., Albert..... 505
Engelhard, George..... 505
Engelhard, R. W..... 505
Engelhard, Victor H..... 505
Engelhard, Jr., Victor H..... 505
Engelhard & Sons, Inc., A..... 505
English, Dr., *q.*..... 180
English c.-pots (1714-70)..620, 621
English Factories in India, Foster, *q.*..... 2
Ennis, Frank..... 515
Ensaccador 304
Enterprise Coffee Co.....485, 508
Enterprise Mfg. Co. of Pa. 469, 471, 639, 646
Eoff, Garrett..... 612
Epicure, per...... 675
Eppens, Frederick P..... 482
Eppens, William H..... 482
Eppens, Smith & Co..... 482
Eppens, Smith & Wiemann... 482
Eppens, Smith & Wiemann Co. 485, 496, 499
Eppens Smith Co.....494, 496, 499
Eppens-Smith Co.....496, 499
Erdmann, *q.*.....163, 183
Erecta, C., hyb...... 140
Esau 13
Escoffier (chef)..... 678
Escott, *q.*..... 87
Esménard .....548; *q.* 8
Esperanza Coffee Co..... 497
Essential oil.....163, 164
Essmueller Mill Furnish'g Co.. 649
Estienne, Jacques..... 548
Estrado & Co., Pedro..... 840
Etablissements Lauzaune (*see* Lauzaune)
Etherege, Sir George.....569, 570
Ethridge, Tuller & Co..... 508
Etiquette
—Arabia 658-663
—Paris (17th century)..... 91
—Turkey 664-670
—(*See also* Manners and Customs)
Etruscan Coffee Pot Co..... 645
Etymology 1, 2, 3, 27
"European fiasco" (1888)..... 529
Evans, *pat.*..... 158
Evans, David G..... 503
Evans, Gwynne..... 503
Evans, Richard, *pat.*..... 624
Evans & Co., David G....502, 503
Evans & Walker.....508, 635
Evelyn, John, *q.*.....2, 40
Evening World, New York, *q.* 553, 554
Ewé 160
Ewell, *q.*..... 165
Ex-sailing ships..... 316
Excellent Qualities of Coffee and the Art of Making It, The, Rumford...621, 622
Excelsa, C...... 142
—French Indo-China..... 237
—Java 217
Excelsa x *liberica, hyb.*..... 146
Excelsior Mills.....501, 502
Excelso (grade)..... 261
Excessive use, effect of..... 179
Exchange, Foreign..... 336
Exchanges, Coffee.....329-337
—Amsterdam 296, 491
—Antwerp 296, 491
—Baltimore 491
—Hamburg 296, 329, 491
—Havre.....296, 329, 491
—London 296, 491
—New York.....329-337, 471, 491
———Change of name..... 474
———Clearing Ass'n.....331, 335
———Contract 321
———Functions 331-338
———Incorporated (1881)..... 471
———Initiation fee..... 332
———Membership 333
———Organized (1881)..... 528
———Reincorporated (1885)... 471
——— Rio gradings..... 343
———Robusta dealings prohibited 341
———Seats, Sales of.....332, 333
———Wartime suspension...534-537
—New Orleans..... 491
—Rotterdam 296, 491
—Royal (New York, 1752)... 120
—San Francisco..... 491
—Santos 306, 308, 491
—Trieste 296, 491
Excursions through Asia-Minor, Fellows, *q.*.....667, 668
Experimental gardens (*see* Gardens).
Exports 276, 277
—Abyssinia 228, 229, 276, 284, 285
—Aden (1921)..... 276
—Africa, British East....276, 285
—Arabia 282
—Borneo, Brit. North....276, 284
—Brazil 190, 275-277, 295
———First (1770)..... 204
———Largest (1906-07)..... 275
—Central America, first to U. S. 469
—Ceylon (1741-1900)..... 283
———First (1721)..... 236
———Largest (1873)..... 237
—Colombia 192, 276, 278
—Costa Rica.....193, 276, 280
—Cuba 233, 282
—Dominican Republic....194, 233, 276, 281
—Ecuador 276, 278
—Federated Malay States..... 284
—France (1921)..... 290
—Germany (1920)..... 290
—Gold Coast (1916-17)..... 276
—Grenada (1916)..... 282
—Guadeloupe 234, 276, 282
—Guatemala 192, 276, 280
—Guiana 276, 279
—Haiti 194, 276, 281

Exports (*cont'd*)
—Hawaii 194, 241, 276, 284
—Honduras 276, 280
—India 195, 276, 282
—Indo-China, French..... 237
—Jamaica 193, 276, 281
—Java 283, 294
—Leeward Islands..... 282
—Mauritius 285
—Mexico ..193, 220, 276, 280, 281
—Netherlands 290
—Netherlands E. Indies...195, 276, 283, 295
—New Caledonia..... 243
—Nicaragua 276, 280
—Nigeria 276, 285
—Nyasaland 276, 285
—Peru 276, 278, 279
—Philippines 242, 284
—Porto Rico ...194, 222, 276, 281
—Portugal 290
—Producing countries (table). 276
—Reunion 276, 285
—Salvador 193, 276, 279, 280
—Santos (1900-01)..... 472
—Sarawak 284
—Sierra Leone..... 285
—Somali Coast (French)..276, 285
—Somaliland 276, 285
—Straits Settlements.....238, 284
—St. Vincent (1917)..... 282
—Sumatra 283
—Tobago 282
—Trinidad 282
—United States.....301, 302
—Venezuela 190, 276–278
Extra (grade)..... 261
Extracts, Coffee.....169, 670, 712
—First U. S. trademark..... 469
Eyre, Henry..... 482

Faba Arabica, Carmen, Fellon 543
Fair-price list (Phila., 1776).. 467
Fairy Cup (brand)..... 539
Fakr-Eddin-Aboubeckr ben Abid Iesi 543
Fancies (Sumatra) 355
Faneuil Hall, Boston..... 612
Faneuil, Peter..... 612
Fantasia (grade)..... 261
Fantastic claims for c.....58, 433
—Advertising 439
Faris, Charles..... 612
Farquhar, *q*..... 587
Farr, James, *chk*.....53, 54, 62
Farrell, C. P..... 508
Farrington, Campbell & Co.... 508
Fat content in c.....164, 693 715, 718, 719
—Loss in roasting..... 167
"Father of English C. houses," (Blount) 56
Fatigue, effect of c. on..... 186
Faulder, H., *pat*..... 640
Faunce process, *pat*..... 160
Faust (brand).....441, 539
Fauvel, *q*..... 176
Fazenda (brand)..... 445
Fazendas (*see* Plantations).
Fazendeiros 258, 303, 304
Federal Sugar Refining Co.123, 473
Fell & Bro., C. J..... 501
Fellon 543
Fellows, *q*..... 667
Fendler-Stüber method..... 172
Fenjeyl (*see* Findjan).
Fenjyn (*see* Findjan).
Ferć, *q*..... 186
Fermentation 254
Fermented (*see* Flavors).
Ferrari, Mary, *chk*.....118, 119
Ferris, P. J..... 508
Fertilizers
—Ashes 201
—Chemical determination.155, 156
—Coffee pulp..... 156
Fertilizing 202
—Salvador 219
Fiber, crude..... 718
Fidelity Trust Co..... 112
Fielding, Henry...80, 89, 554, 579, 580
Fielding, John.....579
Figueroa 543
Filter bags, care of...707, 714, 715, 717
Filter paper..... 715
Filtration
—Definition 698
—Methods 715, 716, 721
—N. C. R. A. recommendations 718
Filtration devices
—Acker's "percolator" (1905) 701
—Baker's cloth (1902)..... 647
—Beart's pneumatic..... 705
—Blanke's cloth (1909)..... 651
—Boss (1881)..... 645
—Brain's vacuum..... 705
—Caseneuve's paper (1824).. 623
——Reversed Fr. drip (1824) 699
—Double glass.....637, 701, 702
—Egrot's steam cloth..... 708
—Evans's tin air-float..... 705
—Gaudet's cloth.....623, 699
—Half-Minute 645
—King's, for restaurants..... 651
——"Percolator" 701
—Kin-Hee 646, 647
—Make-Right 651, 701
—Minute 645
—Napier's vacuum, *ill*.....637, 699, 700
—Parker's pneumatic..... 705
—Platow's vacuum glass..... 705
—Private Estate.....649, 701
—Raparlier's pocket..... 637
—Rapid (*see* Rapid)
—Salazar's steam-pressure urn 653
—Tricolator 445, 651, 652, 701
—Tricolette, *ill*..... 654
—Tru-Bru 651, 701
—Vanderweyde's "continuous" 637
—Wear's patent..... 651
Filtré, Café 675
Finch, William, *q*..... 36
Findjans....31, 36, 616, 661, 662
Findlay, Paul, *q*..... 421
Fine; Very fine (*see* Grinds).
Fine Arts, C. in relation to 587–614
Fines (England)..... 59
Fin-ion (*see* Findjans)
Finishing machinery..... 396
Finjans (*see* Findjans)
Fink & Nasse Co..... 502
Finney, Samuel..... 126
First
—Authoritative treatise..... 27
—Comprehensive treatise in German, Meisner's (1721) 46
—Description in print..... 26
—Mention by European....5, 541
—Printed mention.....25, 45
———America 105
———England 35
————As "Coffe"..... 36
———Europe 12
———France 31
—Printed treatise..... 543
—Written mention in Mass. (1670) 107
Fischer, B..... 497
Fischer, Benedickt, 634; *biog*. 497
Fischer, Emil..... 160
Fischer, William H..... 497
Fischer & Co., B.....443, 485, 497, 499
Fischer & Lansing..... 499
Fischer & Lehmann..... 499
Fischer & Thurber..... 499
Fischer, Kirby & Brown..497, 499
Fishback, F. C..... 509
Fishback, Frank S..... 509
Fishback, John S..... 509
Fishback Co..... 509
Fisher, George..... 497
Fitch & Howland..... 484
Fitzgerald 584
Fitzpatrick, Austin C..... 496
Fitzpatrick & Case..... 499
Fitzpatrick & Co., A. C...496, 499
Flanders, Geo. W.....482, 491
Flanders & Co., Geo. W..... 482
Flannel sack used for infusion 620
Flasks and Flagons, Saltus, *q*. 552
Flat (*see* Flavors).
Flat-bean Santos c...260, 341, 342, 366
Flats, 1st, 2d, 3d (grades).... 258
Flaubert, Gustave..... 565
Flavoring, Use in.....723, 724
Flavors 397
Fleury, *pat*..... 640
Fleury & Barker, *pat*..... 638
Flint, Austin B., *q*..... 176
Flint, J. G.....485, 506
Flint, W. K..... 506
Flint, Wyman..... 506
Flint, W. & J. G.....506, 635
Flint Bros. & Co..... 501
Flint Co., J. G..... 506
Flint, Evans & Co....502, 503, 635
Floor brokers.....336, 337
Flora de las Antillas, Tussac, *q*. 8
Florian, *chk*.....27, 28
—(*See* Francesconi).
Flower, Henry..... 126
Flugel & Popp.....502, 503
Foley, John T..... 478
Folger, J. A..... 514
Folger & Co., J. A...488, 505, 506, 509
Folger, Schilling & Co....506, 507
Folkes, Martin..... 578
Folkingham 603
Fontenelle .94, 98, 543, 554; *q*. 565
Food Administration, U. S.
—(*See* Government Control)
Food and Dietetics, Hutchinson, *q*..... 179
Food and Drugs Act, U. S..... 404
Food and drugs inspection.... 338
Food conservation show..... 386
Food use.....136, 615, 655, 693
Food value.....174, 180, 711, 712
—U. S. Army..... 539
Food Values, Locke, *q*..... 180
Foote, Samuel....85, 89, 579, 580, 581, 584
Foote & Knevals..... 485
Forbes, A. E....503; *q*. 629, 631
Forbes, James H.....502, 503, 629, 635
Forbes, Robert M....503, 510, 514
Force & Co., W. H..... 482
Force & Co., W. S..... 482
Force & Co., William H..... 484
Formaleoni, Vincenzo..... 27
Forrester, George R..... 508
Forster, *q*..... 159
Forster's *Life of Goldsmith*, *q*. 573
Forster, E. S..... 508
Forsythe & Co., James..... 502
Fossi & Co..... 340
Foster, *q*..... 2
Foster, A. C..... 479
Fowler, John A., *q*..... 269
Fox 583
Francesconi, Floriono..... 27
Francis, Norman..... 492
Franco-American (brand)..... 441
François, Damame..... 34
Frankel, E. M..... 716
Frankel, F. Hulton, *q*....180, 693
Franklin, Alfred, *q*.....7, 557
Franklin, Benjamin....94, 98, 126, 467
Franklin, Samuel..... 475
Franklin, Walter..... 475
Franklin Tea Warehouse..... 503
Fraser, *q*..... 179
Fraser, David B., *pat*.....642, 644
Fraser Manufacturing Co..... 644
Frederick the Great.....45; *q*. 46
Frederick William I..... 45
Fredericq, *q*..... 184
Freeman, W. G., *q*..... 133
Freight forwarding bureau.... 323
Freight rates
—Brazil to U. S. (1917-18) 535, 536
—Wartime 338
French Color Prints of the XVIII Century, Salaman, *q*..... 589
French Company of the Indies 9
French Revolution...100, 102, 293
French roast.....356, 388
Freund 158
Fricke, E., *q*..... 161
Frisbie & Stephens..... 507
Frisi 558

From Tree to Cup with Coffee, N. C. R. A., *q*.....713, 714
Fromm & Co..... 482
Fruit
—Beverages from.....15, 694
—Food use.....15, 693, 694
Fry & Co., Henry A..... 501
Fryer, *q*..... 2
Fuels 385, 386
—Coal 620
—Electricity 647, 648
—Gas 640, 643
——Natural 642
Full city roast..... 388
Full difference..... 331
Fullard, William, *pat*..... 643
Fulton Mills..... 498
Funk, C., *q*..... 180
Fustian bag used for infusion 620
Future of coffee..... 585
Futures market (New York).. 329
Fuzelier, *q*..... 594

G. G. (hall mark; *See* Garthorn, G.)
Gaa Paa, *v*..... 316
Gabriel, Angel.....15, 23
—Legend 38
Gaffney, Hugh.....497, 498
Gage, H. N..... 505
Gainsborough, Thomas.....84, 583
Galen 11
Galla (*see* Eating coffee).
Galland, Antoine..31, 543, 548, 557; *q*. 2, 12, 16, 20, 22
Gallienii, C..... 147
—Caffein content..... 161
Galt, Herbert, *pat*..... 652
Galuppi 556
Gambetta 96
Gandais, J. A., *pat*. 625, 699, 708
Ganse, John H..... 507
Garair (Arabian bale)..... 266
Gardell, Theodore.....85, 584
Gardens
—Botanical
——Amsterdam 6, 44
——Arabia, royal..... 34
——Paris (Jardin des plantes) 6
——Martinique (Jardin Desclieux) 9
—Experimental
——Bangelan (Java)....138, 146, 345
——Camayenne (Fr. Guinea) 146
——Indo-China, French..... 237
——Java 43, 215
—Pleasure (New York)...121, 123, 124
——Cherry 124
——Contolt's 124
——New York..... 124
——Niblo's, *ill*.....121, 124
——Ranelagh 124
——Sans Souci..... 124
——Vauxhall, *ill*.....123, 124
—Tea (London).....80, 82, 83
——Adam and Eve..... 83
——Bagnigge Wells..... 83
——Bayswater 83
——Canonbury House..... 83
——Copenhagen House..... 83
——Cuper's 82
——Dog and Duck..... 83
——Highbury 83
——Hornsey 83
——Jews' Harp..... 83
——Marylebone 82
——New Spring Gardens..... 82
——Ranelagh, *ill*.....81, 82, 83
——Spring Gardens 82
——Vauxhall, *ill*.....81, 82
——White Conduit House.... 83
Garrick, David.....80, 81, 85, 88, 569, 574, 579, 580, 583; *q*. 573
Garrick, David (Mrs.)..... 579
Garrick, Westphal & Co., S. B. 476
Garrison, C. H..... 508
Garrondona, J. L..... 340
Garth, Sir Samuel.....576, 578
Garthorne, Francis..... 601
Garthorne, George.....601, 602
Garway (*see* Garraway).
Gas roasting.....385, 386
Gaskell, Mrs..... 582
Gasser, M. H...510, 511, 513, 514
Gastronomy as a Fine Art, Brillat-Savarin, *q*..... 557
Gates, H..... 505
Gates, John W..... 519
Gates & Co., A. B..... 508
Gaudet, *pat*.....623, 699
Gaudron 543
Gautier, Théophile....98, 102, 565
Gazette, London, *newsp*..... 585
Gazette de France, per. q..... 8
Gay, John, *q*.....575, 577
Gee, Edward, *pat*..... 634
Geiger, Frank J..... 509
Geiger-Fishback Co..... 509
Geiger-Tinney Co.....508, 509
Gelabert, José Antonio..... 9
Gemaleddin, Sheik.....16, 541
Genius fostered by c..... 557
Geographical distribution..189–195
George III.....106, 117, 583
George V..... 601
George & Co., P. T..... 485
Georgi, Theophilo.....45, 433
Gephart, *q*..... 180
Gerard, (French minister).... 130
German Trading Co..... 527
Germicidal properties..... 180
Germination 5, 138
Gérôme, Jean Léon.....591, 656
Ghiradelli & Co., D..... 505
Giacomini, Luigi, *pat*..... 648
Gibbon, Edward.....81, 583
Gilbert, Colgate..... 494
Gilbert & Co., Colgate..... 498
Gillet, Frère..... 144
Gillett, A. B..... 508
Gilles, E. J., *q*..... 408
Gillies, James W.....495; *biog*. 494
Gillies, Wright.....497; *biog*. 494
Gillies & Bro., Wright....494, 495, 499
Gillies & Co. Inc., E. J....495, 499, 501
Gillies Coffee Co.....494, 495, 499
Gilman, George F.....479, 485
Gimborn, Theo. von..638; *pat*. 639
Glazes and coatings..... 170
Glazing
—Arbuckle's patent..... 522
—Effects 167
—Italy 686
—Machinery 396
Glines, J. T. & N..... 501
Globe Mills.....496, 497, 499, 526
Gloria, Café..... 683
Glover, Force & Co..... 482
Glyceral as sweetening..... 165
Glynn, Martin J..... 482
Glynn & Co., Martin J..... 482
Godey's Lady's Book, per., q.. 711
Goed Vrouw, *v*..... 317
Goetzinger, M. E., *q*..... 521
Gold and Silversmiths' Soc.... 609
Golden Gate (brand)..... 441
Golden Sun (brand)..... 441
Golden Wedding (brand)..... 441
Golden West (brand)..... 441
Goldoni, Carlo...28, 555, 588; *q*. 556
Goldsmith, Oliver...80, 81, 85, 88, 568, 574, 579, 582, 584
—"Retaliation" 573
Goldtree, Liebes & Co..... 488
Goldsworthy, William G., *pat*. 702
Goodhousekeeping, per., q. 175, 176, 182
Gomez, Juan Antonio.....9, 221
Gordon, Douglas, *pat*..... 248
Gordon, Fred P..... 478
Gordon, G. O.....485, 486
Gordon, John, *pat*..... 246
Gordon & Co., Fred P..... 478
Gordon & Co., Geo. O..... 486
Gordon & Co., John..... 246
Gorter *q*.....156, 159, 160
Gothout, Ferd..... 639
Gottlieb 185
Gould (chemist), *q*.....167, 168
Gould, George J..... 519
Gouverneur, Isaac..... 475
Gouverneur, Nicholas..... 475
Gourewitsch, *q*..... 176
Gout, strange remedy for.... 182
Government (brand)..... 434
Government control, Wartime 338, 474, 534–538
Government Monopoly
—Java 213, 214
—Netherlands E. Ind..44, 283, 312
Grace & Co., W. R..442, 482, 488, 489
Grade, Basic (N. Y. Exch.) 329, 335
Graders (N. Y. Exch.)..... 333
Grades 258
—Colombia 260
—Mocha 351
—New York..... 329
—Porto Rico..... 264
—São Paulo 260
—U. S. (prohibited)..... 337
Grading
—Brazil 304, 306
—Hand 258
—Machinery 246-248, 258, 383
—Machine (Van Gulpen's).... 638
—New York Exchange..... 333
—Santos 304
Grafe, *q*..... 164
Grafting (*see* Propagation).
Grage (*see* Peaberry).
Graham, *q*..... 153
Gram, *pat*..... 158
Grand concern of England explained, pamph. 72
Grandin 708
Granger & Co..... 508
Granger & Hodge..... 508
Grant, U. S..... 563
Grassy (*see* Flavors).
Gray, Arthur, *q*.....552, 553, 713
Gray, Louis R..... 446
Gray, Thomas..... 80
Great American Tea Co...479, 499
Great Atlantic & Pacific Tea Co. 417, 479, 485, 499
—Premiums 429
Great Boom (*see* Rooms)..528, 529
Great London Tea Co..... 435
Greeks of the Present Day, About, *q*..... 685
Green, William..... 492
Green coffee marks, *ill*....338, 340
Green Dragon c. urn.....613, 614
Greene, Richard A., *pat*...652, 653
Greenwood, Paul..... 71
Gregory, *chk*..... 93
Grenier, Dufougeret..... 9
Grever & Bro..... 501
Grevy, Francois Paul Jules.... 566
Griebel, *q*..... 159
Griffiths & Co., J..... 508
Grigor & Co., T. S..... 508
Grinding
—Arabia 658–662
—Australia 692
—Greece 685
—Household
——England...695, 696, 704, 705
——Greece 685
——United States..... 711
—Steel cut..... 714
—New Zealand..... 692
Grinding and packing.....167, 168
Grinding machinery...400-402, 615–654
—Chronology 643–654
—Commercial
——Burstone Mills..... 637
——France 680
—Greece 685
—Household 615–620
——First French patent..... 625
Grinding machines
—Household
——Book's (1665)..... 617
——Bronson's patent (1903). 647
——Bruff's patent (1798)... 621
——Clark's hand-mill (1832). 625
——Colaux's patent (1829).. 625
——Dearman's patent (1779) 621
——Electric (first, 1897).... 471
——First English patent..... 634
——First U. S. patent...468, 621
——Herbert's patent (1848).. 634
——Kenrich's mill (1815)... 624

Grinding machines (*cont'd*)
——Laconx' combined roaster and grinder.....625, 627
——Moore's mill (1813)..... 623
——Morgan's glass-jar mill.. 645
———Hand mills.....644, 645
——N. C. R. A. Home Mill (1915), *ill.*.....652, 714
——Parker's hand mill (1832) 625
——Rittenhouse's hand-mill.. 627
——Selden's hand-mill (1831) 625
——Stillman's "mica window" 627
——Stowe's hand mill..... 644
——Strowbridge's box mill... 644
——Turkish combination..... 670
——Van Vliet's hand mill... 634
——Webb's box mill (1878).. 644
——Wilson's steel mill (1818) 623
—Retail
——Dell's store mill..... 644
——Morgan's patent (1919).. 653
—Wholesale
——Barbor mill..... 637
——Burns's granulator...637, 652
——Ideal steel-cut mill (1916) 652
——Knickerbocker (1882)... 645
Grinds 401, 402
—Coarse and fine compared... 167
—Comparative test (1917)... 716
—Definitions 714
—Greek preferences..... 685
—Irregular (King's patent) 167, 402, 474, 716
Griswold, H. F..... 502
Grocer helps..... 412
Grocers Engineering and Whitmee, Ltd.....640, 641, 642
Grocers, Retail, no. in U. S... 415
Grocery stores.....422, 423
—Model c. departments...415, 418
Groff & Co., Charles R..... 508
Grohens, A. P.....646, 649
Gros 589
Gross, March & Co..... 479
Grossman, George A..... 506
Grossman, William..... 506
Grossman & Co., William..... 506
Grossman Co., Wm..... 506
Groundy (see Flavors).
Growths, French preferences.. 680
Gruner, Siegfried..... 478
Gruner & Co..... 530
Gruner & Co., S..... 478
Gruppe, Charles P..... 593
Guadeloupes (c.).....350, 363
Guam c.....355, 375
Guardian (Lond.) *per*...80; *q.* 576
Guardiola, José, *pat*..... 247
Guatemalas (c.).....347, 359, 360
Guildhall museum.....62, 602
Guillasse, Dr., *q*..... 181
Guineas (c.).....353, 378
Gump Company, B. F.....474, 652
Gutteridge, Mary, *chk*..... 108
Gutteridge, Robert, *chk*..... 108
Guy, Francis 593
G. Washington's Prepared (brand) 538
Gwynn (architect)..... 584

Haas, Kalman..... 482
Haas Bros.....482, 488
Haase, Heinrich..... 484
Habit-forming; c is not...176, 186
Habitat 133, 291
Hacendado Mex. El. q..... 156
Haciendas (*see* Plantations)
Hackfield & Co.., Ltd., H..... 488
Haddon, *q*..... 159
Hadrot, *pat*.....621, 622, 699
Haebler & Co..... 485
Haehnlen Bros..... 508
Haeussler, August..... 480
Hagar 18
Hahnemann, Samuel, *q*..... 175
Haimi-Harazi c.....351, 368
Haitis (c.).....350, 362
Hakimani 17
Hakluyt Society.....1, 2
Half difference..... 321
Halifax, Lord..... 577
Hall, G. M..... 502
Hall, I. W., *q*..... 184
Hall, Robert (Rev.)..... 556
Hall & Co., Martin L..... 501
Halla, Wm..... 488
Halley, Dr..... 582
Halligan, T. F..... 513
Hallmarks 601, 602, 607
Hals, Frans..... 587
Halsey, R. T. Haines.....607, 609
Halstead, Charles, *pat*....470, 644
Hamakua c.....356, 375
Hamberger-Polhemus Co..... 488
Hamill, David B..... 509
Hamill, Smith..... 509
Hamill & Co., S.....508, 509
Hamilton Alexander..130; duel. 123
Hamilton, Duke of..... 572
Hamlin, Mary P.....130; *q.* 556
Hamor, W. A., *pat*.....406, 539
Hamsley, M. F., *pat*..... 642
Hanauer, Herman..... 482
Hanauer, Moses G..... 482
Hanausek, *q*.....147, 159
Handbills 432-435
—First (Rosée's, 1652)..... 54
Handbook of Medical Science, q..... 182
Handbuch der Physiologie, q... 177
Hanley, John..... 480
Hanley & Co., Geo. F..... 508
Hanley & Kinsella..... 480
Hanley & Kinsella Coffee and Spice Co.....485, 502
Hannes, Edward..... 572
Harari c.....353, 376
Harari longberry c..... 353
Hard, Anson Wales..... 480
Hard & Rand.....477, 480, 484
—Pacific Mail strs. chartered. 486
Harding, Warren G. (Mrs.)... 567
Hare, *q*..... 183
Hargreaves, C. F., *pat*..... 247
Harkness, *q*..... 176
Harley 573
Harnack 158
Harper's Weekly, q..... 16
Harriman, E. H..... 519
Harrington, Elizabeth..... 614
Harrington, James..... 60
Harris (actor)..... 574
Harris, Benj..... 108
Harris, Samuel L..... 492
Harris, Wm. B.....399, 492, 716
Harrison, D. Y.....503, 629
Harrison, W. H..... 503
Harrison & Co., W. H..... 503
Harrison & Wilson..... 503
Harsh Santos c..... 341
Hartford Steam Coffee & Spice Mills 508
Hartwich, *q*..... 147
Hart & Howell..... 477
Harvard University
—Bureau of Business Research 418, 428
Harvest time.....249, 250
Harvey, Eliab..... 40
Harvey, Gideon, *q*..... 58
Harvey, William..... 40
Harwood 581
Hassey, Cornelius..... 492
Hatch & Jenks..... 508
Hatches, Major, *chk*..... 112
Hatfield c. pots..... 607
Hatton, Edward, *q*..... 54
Haulenbeek, Jr., John W..... 497
Haulenbeek, Sr., John W..... 497
Haulenbeek, Peter....494, 497, 499
Haulenbeek & Co., John W.... 497
Haulenbeek & Mitchell..... 499
Haulenbeek Roasting & Milling Co. 499
Havemeyer, Henry O..506, 521, 523
Havemeyers, The..... 470
Hawaiian c.....355, 375
Hawk, Philip B., *q*.....177, 182
Hawkins, Sir John, *q*..... 579
Hawkins, Thomas..... 505
Hawkins & Thornton..... 505
Haworth & Dewhurst..... 507
Haydon 84, 583
Haye, de la..... 31
Hayes, John (and Mrs.)..... 505
Hayman 583
Hayward, George W..... 508
Hayward, Martin..... 501
Hayward & Co..... 501
Hazlitt, Carew W., *q*..... 28
Hazlitt, William..... 557
Heading 389
Health, Effect on.....174-188
—Favorable....23, 38, 42, 72, 557, 558, 562
—Unfavorable 38, 46
Health and Longevity through Rational Diet, Lorand, *q*..... 182
Heart, Effect on..... 181
Hébert 94
Hedging 329, 335
Heekin, Albert E..... 503
Heekin, James..... 503
Heekin, James J..... 503
Heekin, Robert E..... 503
Heekin & Co., James..... 503
Heekin Co..... 503
Heekin Co., James.....503, 651
Heekin Co., James J..... 503
Heekin Spice Co..... 503
Hekem, *chk*..... 19
Hekteon, *q*..... 178
Helen (of Troy)..... 12
Hellmann Bros. & Co.....487, 488
Hellsten, *q*..... 186
Henckel, James, *pat*..... 245
Hendershot, Peter..... 508
Henneman, Karel F., *pat*..639, 640
Henrici, F. H..... 511
Henrion, *pat*..... 621
Henry IV..... 60
Hentz & Co., Henry..... 482
Herald, New York, *newsp.*, *q*.. 185
Herald of Health, per. q..... 181
Herbert, Luke, *pat*..... 634
Herbert, Sir Thomas..1, 2, 543; *q*..... 38
Herklotz, Corn & Co..... 482
Hemileia vastatrix (*see* Diseases)
Hertford, Countess of..... 570
Hess, H. P..... 508
Hewitt, Jr., Robert..... 557
Hewitt, Jr., Robert C..... 480
Hewitt, H. H..... 507
Hewitt & Phyfe..... 480
Hickey 574
Hidey (*see* Flavors)
High roast..... 388
Higgins & Co., Geo. W..... 501
Hignette, *pat*..... 640
Hildreth, A. G..... 480
Hill, John (Dr.).....576, 580
Hill Bros..... 471
Hill, Dwinell & Co..... 501
Hill & Thornley..... 501
Hillis Plantation Co..... 501
Hinchman & Howard..... 508
Hind, Rolph & Co..... 488
Hinkle, Henry..... 501
Hinz, F. W..... 503
Hippocrates 11, 12
Hire Co., Charles G..... 539
Hires' Soluble (brand)..... 539
Hirsch, *q*..... 186
Historia Vitae et Mortis, Bacon, *q*.....38, 543
History and Antiquities of the City of Boston, Drake, *q*..... 108
History and Reminiscences of Lower Wall Stret, Wakeman 478
Historical and chronological deduction of the origin of commerce, Anderson. 72
History of Am. Manufactures, Bishop, *q*.....105, 115, 125
History of Literature, Routh, *q*..... 561
History (of Phila.), Scharf & Westcott, *q*..... 126
Hlasiwetz, *q*.....159, 165
Hobart Electric Mfg. Co...646, 652
Hobart Mfg. Co..... 646
Hobson-Jobson, *q*.....1, 2
Hoch, *q*..... 186
Hodges, Alderman.....53, 54
Hodges, Dr..... 58
Hodhat, Kadhi, *q*..... 663
Hoepner 472
Hoffman, Daniel H..... 505
Hoffman, Lee & Co..... 485
Hogarth, William..80, 84, 576, 578, 579, 581, 583, 587, 593
Holbrook, E. F..... 539
Holland (*see* Netherlands)

Holland, Charles H..... 501
Holland Coffee Co.....497, 501
Hollingworth, H. L., *q.*176, 185, 186
—Caffein investigations...187, 188
Holman & Co..... 509
Holmes, F. T...471, 472, 641, 642; *pat.* 643
Holstad, S..... 509
Holstad, S. H..... 514
Holstad & Co., S..... 509
Holstad & Co., S. H..... 443
Home, Chamberlain, *q*..... 563
Home Economics Laboratories, Un. of Kansas..... 714
Home, Life of, Mackenzie, *q*... 86
Homer 12
Homeyer, H. L..... 510
Honduras c.....347, 360
Honey in c..... 105
Hookah 668
Hoole 575
Hoopes, B. F..... 508
Hoover, Herbert.....536, 537
Hope, G. W., *pat*..... 649
Horace 543
Horn, William L..... 509
Horner & Co., Henry..... 502
Horter, John..... 506
Hotel Astor (brand).....441, 465
Hotels
—London
——Cecil, *ill*..... 675
——Piccadilly 675
——Richardson's 576
——Sabloniere 583
——Savoy, *ill*.....675, 677
——Tavistock 580
——Waldorf, *ill*..... 675
—New York
——Ambassador 691
——Astor House..... 690
——City 121
——Waldorf-Astoria 690, 691
—Philadelphia
——Mansion House..... 130
Houghton, *q*..... 40
Houghton's collection (1698), *q*..... 54
House-boat coffee house..... 89
Howard, *q*..... 159
Howell, James.....40; *q*. 58
Howell, Son & Co., B. H..... 479
Howells, William Dean, *q*. 548, 549, 567
Howland & Aspinwall..... 476
Hoyt & Co., W. M.....485, 502
Huatusco c.....345, 358
Huber & Stendel..... 508
Hubner, *pat*..... 162
Hudson, D. D..... 507
Hudson, Thomas.....84, 584
Hudson & Co., H. C..... 507
Hudson-Fulton celebration.... 607
Hudson Mills..... 497
Huestis & Hamilton..... 508
Hughes, Charles E..... 332
Hugo, Victor.....98, 565
Hull, John..... 607
Hulling machinery...245, 246, 247, 248, 255, 256
—Bucket and beam crusher...260
—Costa Rica..... 264
—First U. S. patent.....245, 469
—Smout's 257
Hulls, beverage from.....655,
—(*See* Husks) 658, 694
Hulls and pulp, beverage from 15
Hulman, H..... 508
Humboltiana, O..... 147
—Caffein content..... 161
Hume (*pseud.* of Voltaire).... 556
Humphrey, *chk*..... 121
Humphreys, H. M..... 482
Humphry (appr. to Bowman). 54
Hungerford, G. S., *pat*..... 644
Hungerford, G. W., *pat*..... 644
Hungerford Co..... 644
Hunt, Leigh..550, 557; *q*. 562, 578
Hunt, Mathew.....503, 631
Huntington, L. M., *q*..... 155
Huntley Mfg. Co.....248, 472, 642, 643
Huntoon & Towner..... 501
Hurd, Jacob..... 612
Husks, beverage from.26, 156, 231
—(*See* Hulls)
Husted, Ferguson & Titus.... 482
Hutchins, John, *chk*.....116, 117
Hutchinson, *chk*..... 109
Hutchinson, Edward..... 112
Hutchinson, Gov..... 109
Hutchinson, Jonathan, *q*..175, 177, 179
Hutchinson, Woods, *q*....176, 177, 180
Hybrids.....138, 140, 146, 236
Hyde, *chk*..... 122
Hyde, E. J., *pat*..... 634
Hydrolysis 719

Ibrik, (boiler)...31, 615, 656, 658, 668, 695, 696
Ibriq (*see* Ibrik).
Iced c..... 724
Ichtoglan 22
Ideals, Coffee..... 585
Illustrated History of English Plate, Jackson, *q*. 601, 602, 603
Imbusch, J. F. W..... 506
Importers
—Baltimore (Brazil c., 1894). 485
—New Orleans (no., 1900-20). 491
—New York.....475–482
——Brazil c. (1894)..... 484
—— Number (1900-20)..... 491
—Phila. (number 1900-20)... 491
—U. S., Brazil branches..... 304
—San Francisco.....487, 488
——Number (1900-20)..... 491
—(*See* Dealers, Wholesale).
Importing ports
—Amsterdam 327
—Antwerp 327
—Baltimore 482, 484
—Hamburg 327
—Havre 327
—New Orleans.....296, 482, 484
—New York....296, 476, 482, 484
—Rotterdam 327
—San Francisco.....296, 482, 484
Imports
—Aden (for re-export)..... 282
—Argentine (1919)..... 291
—Australia 239, 291
—Austria-Hungary (1913-17). 290
—Ceylon 282
—Chile (1920)..... 291
—Cuba.....281, 282, 291
—Denmark (1921)..... 290
—Fed. Malay States (1920)... 284
—Finland (1921)..... 290
—France 32, 33, 290, 291
—Germany (1920)..... 290
—Italy 290
—Martinique 282
—Netherlands 290, 294
——Early 43, 44, 291
—New Orleans.....482, 484–487
—New York (1881)..... 528
——(1900-20) 480, 484
—New Zealand (1920)..... 291
—Norway (1921)..... 290
—Panama 280
—Portugal (1919)..... 290
—San Francisco.....325, 482, 484, 488, 489
—Spain (1920)..... 290
—Straits Settlements (1920).. 284
—Sweden (1921)..... 290
—Union of So. Africa (1920) 291
—United States.....296,299-302
——Brazil c.....296, 468, 475
——Early 468, 475
——First in Am. vessels..... 468
——Value (1919-21).....299–302
—Venice, early..... 27
Impotence, C. and.....23, 46, 71
Inchbald, Mrs..... 578
Indiana Coffee Co..... 485
Indias (c.).....351, 369
Indigena, O. (Maragogipe).... 345
Indirect flame.....642, 646
Indo-China c.....352, 370, 371
Industrial exhibition (1921).. 654
Influence des cafés sur les moeurs politiques, Salvandy, *q*..... 100
Influence of Alcohol and Other Drugs on Fatigue, Rivers, *q*..... 186
Infusion, defined..... 698
Infusion devices
—Bencini's condenser (1838).. 625
—Biggin (1817).....624, 699, 710, 712
—Dakin's cloth-bag.....633, 645
—Denobe's pharmacological-chemical (1802)...621, 699
—Donmartin's flannel sack (1763) 620, 697
—Duparquet's muslin strainer. 644
—Etruscan (1887-88)..... 645
—First French (1711)....696, 697
—Halstead's china-lined metal. 644
—L'Aine's Diligence (1763)... 620
—Martelley's condenser...624, 625
—Rapid (*see* Rapid)
—Old Dominion (1856)...625, 710
—Rowland's condenser (1844), 625
—Triumph 699
Ingram, Margaret A..... 593
Inner-heated roasting machines, 386
Insomnia caused by c..... 176
Inspector, London, *per*..... 579
Inspectors at ports of entry
—Favored by N. C. R. A..... 513
In-store contract..... 331
Intellectual drink, The..... 566
Intelligence, per, q..... 59
International Coffee Congress (1902) 472
Internationalized by French, C., 585
Introduction, beverage
—Aleppo (1532)..... 19
—American colonies (1668)... 708
—Arabia 11, 12
—Austria (1693)..... 49
—Cairo (1510)..... 16
—Constantinople (1517)...19, 291
—Damascus (1530)..... 19
—England (1637).....35–42
—Europe (1615).....25–30
—France (1644).....31–34
—Germany (1670).....45–47
—Italy (1615).....25, 26
—London 58
—Marseilles (1644).....31, 291
—Mecca (1470-1500)..... 16
—Medina (1470-1500)..... 16
—Netherlands (1616).....43–44
—New York (1668).....115–124
—North America (1660-70) 105–113
—Oxford (1637)..... 40
—Paris (1657).....31, 91
—Persia 21
—Philadelphia (1682).....125–130
—Venice (1615).....25, 291
—Vienna (1693).....49–52
Invisible supply (N. C. R. A.). 514
Ireland, Augustus..... 479
Ireland, Sam....81, 576, 578, 593
Irregular grind, King's patent, 167, 402, 716
Irrigation
—Abyssinia 197
—Arabia 197, 231
—Mexico 222
Irving, Washington, *q*..... 317
Isenberg, Paul..... 519
Ishmael 18
Israel, Leon.....482, 532
Israel & Bros., Leon.....442, 482
Italian roast.....356, 388
Ittel, *pat*..... 640

Jackson, Charles James, *q*.600, 601, 602
Jackson, S..... 486
Jackson, W. F..... 485
Jackson & Co..... 499
Jacob, *chk*.....41, 42, 53
Jacquand 591
Jaeckle, *q*..... 163
Jagenberg Machine Co., Inc... 472
Jalapa c.....345, 358
Jamaica c.....350, 362
James, James, *chk*..... 127
James, Mrs., *chk*..... 127
Jamison, Catherine Arbuckle.. 524
Jamison, Robert..... 524
Jamison, Wm. Arbuckle...523, 524
Janney, Jr. & Co., B. S..... 501
Jardin Desclieux, Inauguration de, q..... 9

Jardin Desclieux, Fort de France 9
Jardin des plantes, Paris..... 6
Jardin, Edélestan, *q*.....2, 3, 6, 14, 16, 27, 32, 557, 565, 629, 695, 708
Jarvie, James N.....479, 523, 524
Java c.....353, 355, 373, 374
Jause 50
Jay Cooke panic..... 527
Jefferson, Thomas..... 130
Jeffreys, Judge..... 570
Jenkins & Bro., T. C..... 507
Jennings, Constantine, *chk*.61, 582
—(*See* Constantine, George)
Jewel Tea Co..... 417
Jewett & Sherman..... 506
Jewett, Sherman & Co..... 506
Jobson, Cirques, *chk*..... 41
Johns, Benjamin, *chk*..... 112
Johnson, James D..... 495
Johnson, Life of, Boswell, *q*... 567
Johnson, Samuel...80, 81, 88, 89, 557, 567, 568, 569, 574, 577, 583, 585; *q*. 561
Johnson & Co., Theo. F...508, 635
Johnson Automatic Sealer Co.. 472
Johnson-Locke Merc. Co..... 488
Johnston, Herbert L., *pat*..646, 652
Johnston, W. T., *pat*..... 642
Johnston, William 501
Johnston & Co., E.....445, 486
Johnston, Gordon & Co..... 486
Joint Coffee Trade Publicity Committee 439, 443, 445–459, 474
—Booklets 455
—Brewing 717, 718
—Coffee Club.....453, 455
—Information service..... 453
—Membership 448
—Organized (1919).....474, 514
—Program 514
—Recipes 723, 724
—Scientific research.....453, 457
Jones, Dorothy.....107, 108, 467
Jones, J. F..... 507
Jones, W. T.....505, 511, 513
Jones, Webster..... 515
Jones & Co., S. L..... 488
Jones Bros..... 501
Jonson, Ben..... 60
Joseph, *chk*..... 93
Joseph Andrews, Fielding..... 80
Joteyko, *q*..... 186
Joubert 96
Jourdain, John, *q*.....1, 2
Journal Am. Chem. Soc., q.155, 160
Journal Am. Med. Ass'n, per., q. 175, 185
Journal d' Antoine Galland, q. 2
Journal of Assoc. Agric. Chem., per., q..... 169
Journal of the Franklin Institute, q.....711, 712
Journal of the Gen. Assembly of the Colony of New York (1709), *q*..... 117
Journal of Pharmachol., per., q. 184
Journal, Revett, *q*..... 2
Journey through England, Mackay 75
Julian, sec. to the Muses.... 574
Julien (of Gobelins)..... 567
Jurgens, *pat*..... 167

Kadoe c.....355, 373
Kaffa 3
Kaffa coffee.....228, 229
Kaffee Hag Corp..... 473
Kaffee-klatsch (first)..45, 433, 683
Kaffee-sieder 50, 51
Kahoueh 3
Kahua 3
Kahvedjibachi 20, 22
Kahveji 665
Kahwa 3
Kahwah 15
Kahwah (coffee-room)....657, 658, 662
Kahwe 45
Kair Bey..... 17
Kaldi 14, 15
Kaltenbach, George.....476, 529
Kant, Immanuel..... 562
Kaspar, Adam J..... 502
Kato, Sartori.....471, 538
Kato Coffee Co..... 538
Kavàh 2
Kaveh 1
Kaveh kanes..... 17
—(*See also* Coffee houses)
Kavveghi 22
Kawih 11
Keable, B. B., *q*.....181, 182
Keats, John.....549; *q*. 550
Keen, William, *chk*..... 120
Keen's Chop House..... 498
Kelly, George..... 501
Kelly, H. D., *pat*.....472, 649
Kemble, John..... 581
Kendrick, F. G..... 507
Kenny, C. D..... 508
Kenrich, Archibald, *pat*..... 624
Kentucky coffee tree..... 564
Kentucky Warbler, The, Allen, *q*..... 564
Kerr, Mary Alice..... 528
Khawah (*see* Kahwah)
Kickleburys on the Rhine, Thackeray, *q*..... 563
Kidde, Frank..... 479
Kidneys, effect on.....175, 181
Kilgour & Taylor..... 503
Kimball, O. G.....527, 528
King, Dr., *q*..... 584
King, John E....513, 539, 701 720; *pat*. 167, 474, 651; *q*. 168, 402, 716
—(*See also* Irregular grind)
King, Moll, *chk*.....581, 587
King, Thomas, *chk*..... 581
King, Tom, *chk*..... 587
King Coffee Products Corp.... 539
King of American breakfast table 107
King of perfumes..... 565
Kingdom's Intelligencer, London, *per., q*.....433, 582
Kipfel 50
Kirby, James H..... 480
Kirby & Halstead..... 480
Kirby, Halstead & Chapin..... 480
Kirby, Halstead & Chapin Co.. 485
Kirkland, A..... 480
Kirkland, W. J..... 480
Kirkland & von Sacks..... 480
Kirkland Bros.....478, 480
Kisher 231, 266, 655, 658
—Method of preparing..... 694
Kissing the cheeks..... 387
Kitchen, James, *chk*..... 130
Kitchen Directory and American Housewife, q..... 709
Kneller, Sir Godfrey..... 578
Knickerbocker & Cooke..... 499
Knickerbocker Mills..... 496
Knickerbocker Mills Co..... 496
Knight, Eberman & Co..... 507
Knowles, Cloyes & Co..... 502
Knowlys, Thomas John, *pat*... 633
Knudsen & Co., P. J..... 488
Koch, *q*..... 186
Kock, Paul de..... 565
Koenig & Co., J. Henry..... 503
Kohwah 12
Kolschitzky, Franz George, *chk*. 49, 50, 51, 590
—Introduces c. to Vienna..... 50
—Portrait, *ill*..... 51
—Statue, *ill*.....50, 599
—Wife (Ursula)..... 51
Kolster & Co..... 340
Kona c.....356, 375
Kooman, G. W., *pat*..... 649
Koran, q.....15, 20
Kosmos Line..... 489
Kraepelin, *q*..... 186
Krag-Reynolds Co..... 502
Kraut, Adolph..... 471
Kreiser, Alexander W..... 509
Kreissel, Fillip..... 538
Kroberger, Charles..... 501
Kroe c.....355, 371
Krout, J. M..... 503
Krull, *pat*..... 247
Krupp A. G. Grusonwerk, Fried, 247
Kuchelmeister, F., *pat*..... 647
Kuhlemeir, Fred J., *pat*..... 648
Kuhlke, George F..... 482
Kunhardt, Henry..... 482
Kunhardt & Co..... 482
Kuprili, Grand Vizier...20, 21 49, 71, 664

Labaree & Co., J. H..480, 482, 484
Labeling machinery..... 403
Labels, law affecting..... 410
Labor
—Angola 268
—Arabia 266
—Arbuckle business.524, 525, 526
—Brazil ..207, 260, 261, 293, 445, 530, 531
—Colombia 260
—Guadeloupe 233
—Guatemala 219
—Guianas 236
—Honduras 234
—Java 269, 271
—Mexico 263, 264
—Nicaragua 264
—Netherlands E. I...283, 293, 294
—Salvador 217
—Sumatra 269
—Venezuela 263
—West Indies 293
Lacedæmonian (*see* Black broth) 13
La Chaussée..... 94
La Coux, Francois Réné, *pat*.. 627
La Guaira c..... 348
La Roque, Jean....31, 32, 34, 543, 557; *q*. 5, 15, 33, 197, 245, 542, 565, 616, 694, 695
La Seine c.-pot..... 607
Lactation, Effect on.....177, 178
Ladies Home Journal, per. 177; *q*. 709
Ladies Home Magazine, per., q. 709, 710
Lahey, B. 480
L'Ainé, *inv*..... 620
Lait, Café au.....691, 696
Lally, Albert V., *q*. 570
Lamb, Charles, *q*..... 550
Lamb (Folger, Schilling & Co.) 506
Lambert, Joseph 642, 646, 471, 472
Lambert Food & Machinery Co. 646
Lambert Machine Co..... 649
Lamboray, C..... 144
Lancet, per., q..... 179
Landanabileo, *q*. 181
Landers, Frary & Clark...472, 644, 647, 648, 649, 653, 701
Langfeld 186
Langius 543
Lantern Slides..... 443
Lantern-shaped c.-pot.....602, 603, 604, 619
Lapicque, *q*. 184
Larousse, *q*..... 91
Lascelles & Co., A. S..... 482
Last-bag notice, New York.. 321
Lastreto & Co. 488
Lathrop & Co., C. D. 484, 485
Laud, Archbishop 41
Laughlin & Co., J. W. 508
Laurens, *pat*. 623, 694
Laurent, Emil 144
Laurentii, C. (robusta)....142, 144
Laurentii Gillet, C. 142
Laurina, C. hyb..... 138
Lauzaune, *pat*..... 640
Lauzaune, Etablissements 625, 646
Lavado (grade) 261
Lawrence, George W. 535, 537
Lawrence & Van Zandt..... 476
Lawton, Frederick, *q*. 557
Lawton, William, *inv*. ...641, 651
Lazear, Jesse 508
Lead number 159, 513
Leaf-blight (*see* Diseases)
Leaves, beverage from ...133, 694
Le Candiot, *chk*. 93
Le Conte, *q*..... 178
Le Gantois, *chk*. 93
Le Morgan Coffee Co. 508
Le Page, Jules, *pat*. 474, 652
Leclerc 96
Lee, H. H. 508
Lee & Murbach 502
Leech, John 582
Lefevre 96

Légal 96
Legendary origin (*see* Origin) 541
Leggett & Co., Francis H. 398, 480, 482, 494
Legislative com. on speculations, N. Y. 322
Lehmann, Julius, *q.*.....70, 183
Lemare 708
Lemierre 94
Lemmon & Son 507
Lemon in c. (Russia)..... 686
Lemonade venders 670
—(*See also* Pedling)
Lensing, J. H. 638
Leo XIII, Pope, *q.* 549
Leone 579
Leopold, Emperor 49
Lepper, *q.* 145
L'Estrange 59
Lester, George C., *pat.* ...472, 647
Lettre sur l'Origine et le Progres du Café, Galland, *q.*.. 12
Leven 185
Levering, William T. 484, 485
Levering & Co., E. 484, 485, 508
Levinthal, *q.* 185
Levy, Florence N., *q.* 607
Levy & Co., M. M. 485
Lewin-Meyer Co. 488
Lawis, Charles.....503; *pat.* 646
Lewis, Teacle Wallace 480
Lewis & Co., T. W. 480
Liberian c.....353, 378
Liberica, C.
—Allied Species 142, 144
—Botanical description...140, 142
—Colombia 211
—Dutch Guiana 236
—Federated Malay States.... 238
—French Indo-China 237
—Guadeloupe 234
—Java 215, 216
—Liberia 229
—Trees to acre..... 230
—Netherlands E. I. (1920).. 283
—United States imports 341
Liberty Boys 120
Licenses
—Boston
——Coffee-house 108
——First, Dorothy Jones.... 107
—England
——Coffee-house 59
——First royal warrant 59
—France (first, 1692) 34
—Germany 46, 293
—Mecca, coffee-house 18
—Philadelphia, coffee-house... 18
—United States
——First (1670) 467
——Wartime (1917-18) ..338, 534
—Wurttemberg 47
Lichty, George E. 535
Lidgerwood, John, *pat.* 246
Lidgerwood, Wm. Van V., *pat.* 246, 247
Lidgerwood Mfg. Co., Ltd.... 246
Liebig, Baron von 682, 684, 685, 687; *q.* 711
Liebreich, *q.* 185
Lievre, Frick & Co. 506
Life of Addison, Johnson, *q.*.. 561
Life of Home, Mackenzie, *q.*.. 86
Life of Johnson, Boswell, *q.*.. 567
Light roast 356, 387, 388
Lightfoot, Alexander, *chk.*.... 120
Lilly (astrologer) 69
Limbird, John 585
Limonaji 670
Linn, A. R. & W. F. 508
Lins, Albuquerque 531
Linschoten's travels, ill., 43; *q.* 35, 37
Lion (brand) 523
Lion's head (Button's c. house) *ill.* 80, 576, 593
Livre Commode (Paris, 1691) 433
Lippincott, Jesse H. 507
Lispenard, Anthony 475
Lispenard, Leonard 475
Literature of coffee 541–585
Literature, Influence of c. on 552, 556
—England 60, 81
—Paris ...94, 96, 98, 100, 102, 103
Littledo, L. *pseud.*, *q.*.....550, 551
Lives of Eminent Men, Aubrey, *q.* 40
Lives of the Lord Chancellors, Campbell, *q.* 570
Lives of the Poets, Johnson.. 570
Livierato, B. A. 479
Livierato, Gregory B. 478
Livierato Frères (Bros.) 338, 478, 488
Livierato-Kidde Co..... 479
Livingstons, The 475
Lloyd, the law-student.579; *q.* 584
Lloyd, Edward, *chk.*.....85, 86
Lloyd, John C. 480
Lloyd & Co., John C. 480
Lloyd's (London) 120
—Register of shipping..... 85
Loading, Santos 312, 314
Loaiza & Co., W. 488
Locke (chemist) *q.* 180
Locket, Mrs., *chk.* 570
Lockier, Dean, *q.* 574
Lockwood, Dr., *q.*..... 176
Lockyer, Captain 120
Loeven & Co., E. 505
Loew, Oscar, *q.* 156
Logan & Strowbridge 644
Logan & Strowbridge Iron Co. 644
London
—Fire (1666) 61, 62, 74, 83
——(1748) *ill.* 76, 83
London, Paris & Am. Bank, Ltd. 488
London Pleasure Gardens of the 18th Century, The, Wroth, *q.* 82
Long, Mary, *chk.* 56
Long, William, *chk.* 56
Longe, W. Harry 444
Longevity, Effect of c. on.... 178
Longhi, Alessandro..... 588
Longhi, Pietro.....556, 558
Lopez, Pedro 220
Lopez & Co., P. A. 338
Lorand, *q.* 182
Lorimore Bros. 508
Lorraine, Prince of 49
Lott & Low 475
Loudon, Howard C. 495
Loudon, J. Carlyle 495
Loudon & Johnson 495, 499
Loudon & Son 495
Loudon & Stellwag 495
Louis XIII 91
Louis XIV 6, 33, 91, 92
Louis XV 8, 92, 94, 563, 566
Love, N., *q.* 175
Low, Seth 473
Low & Co., Adolphe 487
Lowell, Ebenezer 467
Lower Wall St. Bus. Men's Ass'n 473
Lown Coffee Co., W. G. 508
Lowther, Sir James 584
Loyal Association (London).. 583
Lubricant to human machine. 585
Ludlow & Goold 475
Ludolphus, *q.* 5
Lueder & Co., A. 485
Lure of coffee..... 585
Lurman & Co., T. G. 484, 485
Lusk, *q.* 180
Luttrell 579
Lyman, John Chester, *pat.*..... 245
Lyons, A. Nell, *q.* 563
Lytton, Lord 102

Macassars (c.).....355, 374
Macaulay, Thomas B. *q.*.....75, 77
Macedoine Poetique (1824).... 548
Machinery
—Evolution of 615–654
—History of Manufacture 468–474
Mackay .....75; *q.* 79
Mackey, William D.....477, 491
Mackey & Co. 477
Mackey & Small 477, 480
Mackintosh, Sir James 556
Macklin, Charles 89, 580, 581
Maclachlan, C. H. 527
Maclaine, Jemmy 578
Macrocarpa, C...... 146
MacVeagh & Co., Franklin 485, 502
Madagascar c.....353, 378
Madagascar, C. 146
Madagascariensis, C. 146
Maddux, H. Clay 479, 491
Magic Cup (brand) 539
Maguire, Charles 479
Maguire, Joseph 497, 498
Maguire & Gillespie 508
Mahomet (*See also* Mohammed) 38
Mahood, E. B. 507
Mahood, Samuel 507
Mahood, W. James 507
Maidi c.....351, 368
Mail-order houses 415
Maine & Eckerenkotter 505
Mairobert, *q.* 566
Maitland, Coppell & Co..... 482
Maitland, Phelps & Co. 482
Makara, *chk.* 93
Makonnen, Ras 310
Malabars (c.).....351, 369
Malang c.....355, 373
Malaria, Effect of c. on..... 181
Maldonado & Co. 488
Maliban, *chk.* 93
Mallet, J. W., *q.* 176
Malone, *q.* 61, 574
Man, Alexander, *chk.* 59, 88
Mandelsloh, Joh. A. von *q.*.... 45
Mandheling c.....355, 371
Manet, Edouard 103, 104
Manipulated Java 338
Manizales c.....348, 364
Manner of Making C., Tea and Chocolate, Dufour..... 543
Manners and Customs 655–692
—Abyssinia 655
—Africa 655–657
—Africa, Portuguese E. 657
—Algeria 655, 656
—Arabia 657–663
—Argentina 691
—Asia 657–663
—Brazil 691
—Chile 691
—Constantinople..19, 22, 23, 663–670
—Damascus (c.-house) ...668–670
—England (c.-house)....60, 75–89
—Egypt 655–657
—France 33, 680–683
—Germany 683–685
—Italy 686
—London (c.-house) 73
—Mexico 687
—Netherlands 686
—New Orleans 690
—North America 686–691
—Norway 686
—Oriental, Early ..17, 19, 22, 23
—Paraguay 691
—Paris..91, 96, 98, 100, 102, 103, 104, 554, 683
—Persia (c.-house)..... 22
—Philadelphia (c.-house).... 128
—Saxony 684
—Somaliland 655
—Sweden 686
—Thuringia 684
—Turkey 20, 27, 36, 38, 663–670
—Uganda 655
—United States 687–691
—Uruguay 691
—Vienna (c.-house)..562, 671, 672
—(*See also* Coffee houses)
Manning, E. B., *pat.* 637
Manning, Bowman & Co...649, 701
Manthey-Zorn Laboratories... 653
Mantsaka c., *ill.*..... 142
Manual of Pharmacology, Sollman, *q.* 182
Manufacture, U. S..... 298
Many, Daniel 507
Marac 682
Maracaibo c.....348, 349, 365
Maragogipe c.....345, 367
Maragogipe, C., hyb...... 140
—India 227
Marat 94
Marchand, *pat.* 640
M'Ardell (mezzotinter)....84, 584
Marden & Folger 506, 507
Marden & Myrick 505
Margins 329, 333, 335
Mariahalden 519, 520
Marie Antoinette 96
Marilhat 591

Marion Harland c.-pot....645, 699
Market names..... 191
—(*See also* Characteristics)
Marlborough, Earl of..... 109
Marmontel 98
Marquis de Someruelas, *v*..... 468
Marshall, *q*..... 183
Martelley, Lewis, *pat*. 624, 699
Martin, *pat* 485, 640
Martin & Co., N. 485
Martinique c.....350, 363
Martinique, Histoire de la, Daney, *q*..... 8
Martinique, La, Pardon, *q*.... 8
Marvell 60
Mary, Queen 601
Mason, Fred 689
Mason, L. F. 479
Mason, Marcus, *pat*...246, 248, 469
Mason & Co., Marcus.....248, 469
Mason & Thompson 476
Mason machines 264
Masons, Grand Lodge 110
Masons, St. Andrew's Lodge.. 111
Mass. Inst. of Technology
—Scientific research.....453, 457, 515, 714, 717
Massieu, Abbé Guillaume, *q*. 14, 544
Matagalpa c.....347, 360
Materia Medica and Pharmacology, Culbreth, *q*..... 181
Materia Medica, Pharmacy and Therapeutics, Potter, *q*... 181
Materia Medica, Therapeutics and Pharmacology, Butler, *q*..... 179
Matheson, S. 482
Matheson, Jr. & Co., S..... 482
Mattari c.....351, 368
Mattei, *q*..... 180
Maumenet, *q*..... 548
Mauran, C. S. 502
Mauritiana, C., ...138, 146
—Caffein content 147, 161
Maury, Joseph E. 515
Maximilian Frederick, Elector, *q*..... 47
Maxwell, *q*..... 165
Maxwell House (brand) 441
Mayer Bros. & Co. 482
Mayflower, *v*. 108, 616
—Mortar and pestle, *ill*. 105
Mayne 585
Mayot 96
Mazagran, Café.....92, 655, 682
Mazerolles, S. 591
McBride, R. P. 482, 499
McCann, Alfred W. 398, 399
McCarthy Bros 488
McChesney & Sons 488
McClean, Jemmy (*see* Maclaine)
McCord, Brady Co. 508
McCready, William 479
McCreery, Henry F. 480
McCreery, R. W. .....511; *q*. 427
McDonald, Duncan 521, 522
McDonald & Arbuckle 521
McDonald & Arbuckles 522
McDonald & Glynn 482
McFadden, J. M. 513
McFadden & Bro., George H... 480
McFarland, A. 508
McGarty, M. J. 399
McGill, A., *q*..... 687
McKinnon, William 245
McKinnon & Co., Ltd., Wm... 245
McLaughlin, Frederick 502
McLaughlin, George D. 502
McLaughlin, William F. 502
McLaughlin & Co., W. F..443, 502
McLaughlin & Co., W. H..... 484
McMaster, John Bach, *q*. 468
McMullin, John 612
McNeil & Higgins 502
McNeil & Higgins Co. 502
McNeil, Thomas 494
McNulty, John R. 479, 491
McNulty & Co., J. R. 479
McReynolds, Attorney General 533
Meacock, James, *pat*. 245
Mead, Dr. 582
Meal Market, New York 119
Meat-packers in c. trade..... 514
Mechanic's Magazine, London 585
Medellins (c.) 348, 364
Medical News, per, q., ... 183
Medical Record, per, q., ... 185
Medical Times, per, q. 176
Medicinal properties of c...12, 26, 27, 38, 45, 56, 58, 71, 72, 175–188
—Due to caffein content 182
Medicine
—C. first used as 693
—Café au lait used as 696
Meditations, Brillat-Savarin, *q*. 697
Medium (*see* Grinds)
Medium roast 356, 388
Meehan, Charles L. 535
Meehan, P. C. 476, 477
Meehan & Co., P. C. 477
Meehan & Schramm 477
Meidinger, *q*..... 565
Meilhat 594
Meisner, Leonhard Ferdinand 46, 543
Meith, Hugo 591
Mejia, E. 488
Melangé, Café 671
Melaye, S. 548
Mellon Inst. of Industrial Research 714
Memoirs, Diderot 98
Memoirs, Sherman, *q*..... 563
Menado c.....355, 374
Menda & Co. 340
Mendel, *q*..... 185
Menezes, T. Langaard de, *ill*.. 446
Mengal 694
Menico 28
Menier 566
Menosperma, C., hyb. 138
Menown, Hugh 631
Menown, H. & J. 502
Menown & Gregory 631
Men's Answer to Women's Petition, The, pamph..... 71
Menslichen Genusmittel, q.... 147
Mental and Motor Efficiency
—Effect of caffein on 186
—Effect of tea on 186
Menzel, Adolph 591
Merchants Coffee Co. of N. O., Ltd. 505
Merchants Exchange (New York) 123
Merck & Co. 473
Mercure de France, q. 8
Meridas (c.) 349, 365
Merrill & Co., S. C. 487
Merritt & Ronaldson 499
Merwin & Co., Geo. A..... 499
Mery, C. D. 548
Messenger & Co., Thomas H... 480
Metchnikoff, *q*..... 178
Metropolitan Mills 494, 495
Mexicans (c.) 345, 338, 359
Meyer (chemist) 164
Meyer, B. 535
Meyer, Fred W. 502
Meyer, Robert 510, 511, 513
Meyerheim, Paul 591
M'Ginley, Joseph 492
M'Gregor, Coll. 476
Michaud, I. F. and L. G., *q*.. 8
Michelet, *q*..... 98
Microscopy of c.....149–153
—Analysis, value 152
Microscopy of Vegetable Foods, Winton, *q*..... 150
Midland Spice Co. 508
Milde 591
Milds (market name)....341, 345
—(*See also* Characteristics)
Milk in coffee 38, 58, 399, 665
—Effect of 178
—First used by Nieuhoff (1660) 696
Millar & Co., E. B. 502
Millar Spice Co., E. B..... 502
Miller, Chas. A. 480
Miller, Harry 480
Miller, Rev. James....555, *q*. 554
Miller, R. O. 501, 514
Miller, Watts 480
Miller, W. H. 488
Miller & Walbridge 480
Miller, Smith & Co. 485
Milling (*see also* Cleaning)... 383
Milreis 336
Milton, John.....60; *q*. 549
Miner, W. H. 505
Minerva, *v*..... 128
Minford, Thomas 479
Minford & Co., L. W. 479, 485
Minford, Lueder & Co. ...477, 479
Minford, Thompson & Co. 479
Mingo, Cirilo, *pat*..... 471
Minkowski 185
Minor, W. H. 485
Minott, Samuel 609
Minute (brand) 539
Minute, Café à la 708
Mirror, London, *per*. 585
Misbranding
—Condemned by N. C. R. A... 513
—Rulings (U. S.) 337, 338
Mitchell, George 478
Mitchell, William L. 478
Mitchell Bros. 478
Mixing (*see* Blending)
Mixtures, Strange c. 56, 57
Moat With the Crimson Stains, The, Champney, *q*....563, 564
Mocengio 27
Mocha c...230, 351, 353, 368, 369
Mocha longberry c..... 228
Mocha-seed Bourbon-Santos c. 341, 366
Mocha-seed Santos (grade)... 260
Modern Italian Poets, Howells, *q*.....548, 549
Moegling, Carl, *inv*..... 647
Mogeneti, C. (caffein content) 147, 161
Mohammed..14, 15, 19, 20, 38, 54
Mohammed IV.....49, 50, 91
Mohedano, Jose Antonio 9
Mohns-Frese Com. Co. 488
Moir, John R. 535
Mokaska Mfg. Co.....485, 508
Mokkae, C., hyb. 138
Molded beans 170
Molke 9
Molmenti, Pompeo, *q*. 27, 28
Moncrieff (dramatist) 572
Moncrieff, Alexander, *chk*..... 572
Moneuse, Elie,, *pat*. 469, 639
Monin, Sieur, *q*..... 696
Monitor machines 248
Monk, General 59, 69
Monkey coffee 136
Monroe, James (Pres.)..... 113
Monstruo (grade) 261
Montagu, Lady Mary Wortley 573
Montague, *q*..... 551
Monte Carmelo c.....350, 365
Montealegre & Co. 487, 488
Montesquieu 100
Montuori, *q*..... 176
Moore, Alexander Duncan, *pat*. 623
Moore, C. T. 508
Moore, Dr., *q*..... 179
Moore & Co., Geo. A. 488
Mopsy 579
Moréas, Jean, *chk*..... 102
Morewood, T. C., *pat*. 642
Morey Mercantile Co., C. S.... 508
Morgan, Charles 644; *pat*. 645, 653
Morgan, Edward H. 644
Morgan Brothers 644
Morize, *pat*. 623, 699, 708
Morley, W. T. 513
Morning Advertiser, Lond., *newsp*..... 585
Morning Chronicle, London, *newsp*..... 585
Morning Herald, Lond., *newsp*. 585
Morning Post, Lond., *newsp*.. 585
Morosini, Gianfrancesco ... 26
Morrison, S. B. 497
Morrison, Wm. J. 498
Morrison & Boinest Co. 498
Morton, Robert 69
Mosely, Dr. Benjamin, *q*....2, 38
Moser (artist) 584
Mosso, Ugolino, *q*..... 186
Most excellent virtues of the mulberry called coffee (1671) 34
Mother (grade) 258
Mother of cafés (Vienna).... 50
Motion pictures 443, 455, 514
Mott & Williams 494
Mottant, A. 641, 645
Muddiman 59
Mudiford 58

Muhlberg, R. *pat.* 638
Muller, Frederick H., *pat.* 653, 702
Munden, Admiral.....86, 559
Murdock, Charles A. 506
Murdock & Co., C. A. 508
Murdock Mfg. Co., C. A..... 506
Murger, Henry 98
Murphy, Arthur .....584; *q.* 579
Murray, Sir James.....699; *q.* 1
Murray, James H. 496
Murray, Robert 475
Murta, C., hyb. 138
Musgrave, James 612
Music, C. in 593–599
Music in coffee houses.....656, 666, 667, 669
Mustapha, Kara 49, 50
Mustard in c. 58, 696
Myer, *pat.* 162, 473
Myers, Myer 612
Myine (architect) 584
Mysore c.....351, 369
Myrtle c. (Mexico)..... 222

Nabob (brand)..... 441
Nairon, Antoine Faustus...16, 27, 543
Nakhel douin (palm) 266
Nalpasse, Valentin, *q*.....175, 176, 177, 179
Names for c. (English and foreign) 1, 2, 3
Names of places (*see* Note, p. 769)
Nancy (tea ship) *v*..... 120
Naphew, Charles..... 479
Napier, Robert, *inv*..637, 699, 700
Napier & Co..... 486
Napier & Sons, Robert..... 699
Narcotism, Effect of c. on.... 181
Narghil (palm) 266
Narghillai 663, 664, 665, 668
—(*Also* nargile, narguileh)
Nash Grocery Co., George.... 503
Nash, Smith & Co..... 502
Nash-Smith Tea & Coffee Co.. 503
Nashville Coffee & Mfg. Co.... 509
Nason, James H., *pat*..... 637
Nat'l Ass'n of Retail Grocers of the U. S..... 428
Nat'l Chain Store Grocers' Ass'n 417, 418
National coffee day..... 513
Nat'l C. Roasters Ass'n....323, 439, 448, 473, 474, 509–515
—Better c. making com...713–717
—Brewing recommendations.. 717
—Conventions 512–515
—Dues 514
—Freight forwarding bureau.. 323
—Home mill..... 652
—Industrial Expositions..514, 515, 654
—Membership 511–514
National C. Roasters Traffic and Pure Food Ass'n. 510, 511
National Coffee Week....439, 455, 473, 474, 514
Nat'l Packaging Machinery Co. 443, 472
Nat'l Retail Tea and Coffee Merchants' Ass'n..... 417
National Review, per, q..... 74
Nature, Café..... 683
Nature of the Drink Kauhi, The, Pocoke's trans. *q.* 12. 38
Nature, quality and most excellent virtues of c., The (broadside), *ill*.....69, 70
Navarre, Francisco Xavier..9, 225
Nave & McCord Merc. Co..... 485
Nave-McCord Mfg. Co..... 508
Negro plot (New York, 1737). 118
Neidlinger & Schmidt..... 499
Nelson, Charles, *pat*..... 649
Nepenthe 12
Nervous system, Effect of c. on 174, 175
Netherlands E. India Co....43, 44, 283, 291, 294
Netherlands West India Co... 105
Neutral (*see* Flavors)
Nevers, George J..... 479
Nevill 60
Nevison, J..... 631
New and curious coffee-house, etc., *The, per*.....45, 433
New Caledonia c.....356, 374
New Guinea c.....355, 374
New Discoveries, etc., Paschius, *q*..... 13
New England Automatic Weighing Machine Co..... 471
Newbold, William..... 479
Newell, *pat*..... 246
Newhall, H. B..... 501
Newmark, H..... 509
Newmark, Maurice H..... 509
Newmark & Co., H..... 509
Newmark & Co., M. A..... 509
New Orleans Coffee Co....485, 505
New uses for c..... 457
New View of London (1708), Hatton 54
New York
—Coffee and Sugar Exchange (*See* Exchanges)
—*Daily Advertiser, q*.....434, 468
—Dock Co.....319, 532
—*Gazette, per., q*..... 118
—Historical Soc.....474, 591
—Hospital 124
—*Journal, per* (1775) *q*..... 115
—Stock and Exchange Board.. 123
News from the coffee house (broadside), *q., ill*....68, 69
Newstadt, Emil, *pat*..... 645
Niblo, William, *chk*.....121, 124
—(*See also* Gardens)
Nicaraguas (c.) 347, 360, 361
Nicholson, David..... 502
Niemuhr, Karstens ....543; *q.* 22
Nielsen, Thorlief S. B..... 520
Niessen, von, *pat*.....158, 167
Nieuhoff 543, 696
Niles, G. M., *q*..... 175
Nonnenbruch, *q*..... 185
Nonnenbruch, q..... 185
Nordlinger, Henry..... 482
Nordlinger & Co., Henry..... 482
Norris, G. W.....532, 533
North, Roger, *q*.....72, 570
Norton, Edward 471
Norton, Weyl & Beven..... 482
Norton & Holyoke..... 434
Nossach & Co..... 340
Notes and Queries, per, q.... 1
Nurseries 200, 205
Nutmeg in c..... 696
Nutrio Mfg. Co..... 501
Nutt, Jr., F. T..... 535

Oaxaca c.....345, 358
Oberholtzer, Ellis Paxson, *q*.. 125
O'Brien 579
O'Brien, E. H.....455, 488
O'Brien, Jonas P..... 482
O'Brien, Joseph A.....482, 491
Oceana, Harrington..... 60
O'Donohue, Charles A..... 123
O'Donohue, John.....480, 498
O'Donohue, John B.....123, 498
O'Donohue, Joseph J..... 480
O'Donohue, Peter.....480, 498
O'Donohue & Co., J. B..... 485
O'Donohue & Sons, John..... 480
O'Donohue & Sons, Joseph J. 477, 480
O'Donohue & Stewart..... 498
O'Donohue Coffee Co..... 498
O'Donohue's Sons, John:..338, 485, 498
Oelschlager (*see* Olearius)
Of the Excellent Qualities, etc., Rumford, *q*.....697, 698
Ogden & Co., George..... 501
Ogilby 571
Ohio Coffee & Spice Co..... 508
Oils, Coffee.....164, 711, 712
O'Krassa, R. F. E., *pat*..247, 248
Olavarria, J. D..... 471
Old Dutch Mills..... 482
Old Ground Coffee Works..... 492
Old Judge (brand)..... 441
Old Homestead (brand)..... 441
Old Master (brand)..... 441
Old Reserve (brand)..... 441
Oldys, William, *q*..... 53
Olearius, Adam, *q*.....22, 45, 543
Olendorf, Case & Gillespie.... 478
Olivier, Abbé 548
Omar, Sheik.....13, 14, 655
Opera: *Le Café du Roi*, Meilhat and Deffes..... 594
Opposition
—Commercial
——England 64, 74
—Medical
——Cairo 19
——Germany 46
——Marseilles 32, 33
——Mecca 17
—Political
——Constantinople 293
——England (c. houses)...72, 293
———Proclamation, Charles II 73
——Germany 46, 47
——London 293
—Religious
——Cairo 19
——Constantinople 20, 21
——Mecca 17, 18
——Venice 29
—(*See also* Controversies: Coffee houses)
Options 329
Orange juice, peel, in c..... 106
Ordinaries (*see* Taverns)
O'Reilly, Count, *q*..... 222
Organon salutis (1657), Rumsey's, *q*.....56, 58
Oriental Trip, Mandelsloh, *q*... 45
Origin of c..5, 11, 13–16, 541–542
Orizaba c.....345, 358
Orleans, Regent of.....96, 98
Osborn, Lewis A....434, 469, 496, 522
Osborn's Celebrated Prepared Java (brand) ...434, 469, 496, 522
Oseretzkowsky, *q*..... 186
O'Shaughnessy, John W..... 480
O'Shaughnessy & Co., John W. 480
O'Shaughnessy & Sorley..... 480
Ostrander, Loomis & Co..... 508
O'Sullivan, Eugene..... 479
O'Sullivan, James..... 479
O'Sullivan & Co., Eugene..... 479
Otis, James.....110, 111
Otis, McAllister & Co..... 488
Otter, *v*..... 127
Otto, Carl Alexander, *pat*..640, 641
Outlandish drink..... 59
Over the Black Coffee, Gray, *q*. 713
Overton, John B..... 479
Ovington, *q*..... 2
Oxford Coffee Club..... 41
Oxford, Lord..... 584

Pacific Mail Co.....489, 490
Package coffees
—Advantages, disadvantages 408, 409
—Deterioration 168
—Early (U. S.).....469, 470, 522
—First crude (1791).....491, 492
—France 680
—Great Britain..... 673
Packaging economies.....410, 412
Packaging machinery..383, 402–404
—United States patents..... 470
Packard & James..... 494
Padang, *v*..... 317
Padang Interior c.....355, 371
Page, Judge, *q*..... 570
Page, Thomas, *pat*..... 637
Painter, John (*see* Paynter)
Pal, *q*..... 184
Palaces, C. (*see* Coffee houses)
Paladino, *q*..... 159
Palais Royal (Paris).....96, 102
Palambang c.....355, 372
Palatability aid to digestion. 180
Palgrave, *q*.....658–661
Palmer, David..... 480
Palmer, Harvey H..... 480
Palmer & Co., H. H..... 480
Palmer, Warner & Co..... 508
Paludanus, Bernard Ten Broeke, *q* 2, 35, 41
Pamela, Richardson..... 80
Pamphlets (*see* Broadsides)
Panamas (c.) 348, 361
Pan-American Congress 472

Panics, U. S. 528–530
—(*See also* Booms and panics)
Panter, William, *pat*..... 245
Paradise Lost, Milton..... 584
Parché, Café en (Guadeloupe). 257
Parchment 136, 138, 149, 150
Pardon, *q*..... 8
Parent & Co., J. A..... 508
Parini, Guiseppe, *q*.....548, 549
Park, Fellowes & Co..... 508
Park & Tilford.....494, 499
Parker, Charles, *inv*.....469, 625
Parker, Edmund, *pat*.....625, 636
Parker, Gilman L..... 501
Parker, John, *pat*..... 634
Parker & Dixon..... 503
Parker & Harrison 503, 635
Parker Co., Charles 625
Parkes, *q*..... 704
Parkinson, John .....534; *q*. 41
Parlin, Charles Coolidge..... 441
Parmentier 8
Parr 557
Parrott & Co.....487, 488
Parry (Welsh harper) 85, 584
Parry .....543; *q*. 36
Parson 557
Pascal, *chk*...33, 92, 94, 554, 619, 670; *q*. 432
Paschius, George, *q*..... 13
Patents, U. S..... 654
Patrick (lexicographer)..... 576
Patterson, Robert W., *q*.... 106
Pavoni, Desiderio, *pat*..... 649
Pawinski, *q*..... 185
Payen, *q*..... 694
Paynter, Jonathan.....53, 54
Peabody, B. F..... 535
Peaberry 136, 249
—Botanical description..... 149
Peaberries, 1st and 2d (grades) 258
Pears in c. (Russia)..... 686
Pearson, George..... 507
Pearson, Peter, *pat*.....638, 640
Pechey 543
Peck, Edwin H..... 477
Peck, Walter J..... 477
Peck, E. H. & W. J.....477, 484
Peck & Co., Edwin H.....477, 479
Peck & Kellum, Benj..... 508
Peck, Stowe & Wilcox Co.... 644
Pedling
—Constantinople 21
—Florence 670
—Italy 27, 29, 670
—Padua 29
—Paris 92, 93, 94, 96
—Vienna 51
Pedrocchi, Antonio, *chk*...29, 599
Peeling (*see* Hulling)
Pellicularia tokeroga (*see* Diseases)
Pemberton, John 128, 129
Penn, John.....127, 129
Penn, Letitia 128
Penn, William..105, 115, 125, 126, 467
Pennsylvania Gazette, newsp. q.....126, 127
Pennsylvania Journal, newsp. 127, 128
Penny-change plan..... 427
Penny Magazine, per., q..... 704
Penny universities..... 73
Peonage (*see* Labor)
Pepion, John..... 508
Pepys, Samuel, *q*.....59, 554, 561, 574, 582
Percolator, The per., q..... 521
Percolators
—Acker's Mo-Kof-Fee..... 645
——testing-table..... 649
——two cylinder (1905)..... 645
—Andrews's pumping (1841). 700
—Bohemian 654
—Bouillon Muller's steam..... 708
—Bowman's valve-type (1876) 637
—Bruning's vacuum jacket (1920) 653
—Cafetière Sené (1815)..... 699
—Carlsbad 654
—Chamberlain's automatic.... 652
—De Belloy's (1800).....621, 622, 697, 708
—De Santais' hydrostatic ... 629
Percolators (*cont'd*)
—Durant's pumping 625, 699
—First French patent (1806), 699
—Galt (1914).....652, 701
—Gandais' pumping 625, 699
—German (plug in spout).... 708
—Glass "balloons"..... 627
—Hadrot's "filter" 621, 699
—Half-minute (1881)..... 701
—Hutchinson's 710
—Jones's pumping..... 704
—Kellum (1906)..... 649
—Kin-Hee (1900)..... 701
—Laurens' pumping 623, 699
—Laurent's steam "whistling," 708
—Malen's 708
—Marion Harland.....645, 696
—Mo-Kof-Fee (Acker's)..... 645
—Morize's reversible 623, 699
—Nason's fluid-joint (1865).. 637
—Nelson's patents (1912-13).. 649
—Phylax (1914)....652, 701, 702
—Potsdam 710
—Preterre's vacuum (1849)... 634
—Pumping discussed.....714, 715
——(first, 1819) 623
—Rabauts reversed (1822).... 699
—Raparlier's glass "filter"... 708
—Reversible double drip 623
—Rumford's (1806-12)...621, 622, 623, 697, 698
—Rumford type..... 705
—Russian egg-shaped..... 708
—Savage's patent (1906) ... 649
—Smart's patent (1919)..... 653
—Star (1886)..... 645
—Sternau's patent (1904) ... 649
—Universal (1901)..... 647
—Vanderweyde's patent (1866) 637
—Vardy's vacuum urn...627, 699
—Vassieux' glass (1842)..627, 700
—Vienna 638, 639
—Viennese type..... 708
—Warner's patent (1906).... 649
Percolation
—Defined 621, 698
—Discussed (Trigg).....720, 721
—N. C. R. A. recommendations. 718
Percy, Reuben, *pseud*..... 585
Percy, Sholto, *pseud*..... 585
Perez & Sons, Juan Pablo..... 340
Perfect cup of c..... 721–723
Perfect Vacuum Canning Co.. 471
Perfumed c.....59, 695
Pergamino, Café en (grade).. 261
Periert, C..... 146
Persecution (*see* Opposition)
Persian letters, Montesquieu, *q*. 109
Perus (c.) 350, 367
Pests (*see* Diseases)
Peters, J., *q*..... 467
Petit, *q*..... 12
Petring, G. H..... 510
Petty, Sir William..... 60
Pharmaceutical Journal, per, q. 156
Pharmaceutice Rationalis, Willis, *q*..... 58
Pharmacological-chemical brewing device..... 699
Pharmacology, Cushing, *q*..... 179
Pharmacology of c.....174–188
Phelps, Jr., Edward A....495, 499
Philadelphia Commission of Inspection 467
Philidor 96, 98
Philipp, John..... 591
Philippines (c.) 355, 375
Philips, Ambrose..80, 576, 577, 578
Phillipi, Peter..... 591
Phillips, Sir Richard.....578, 585
Phillips & Co., M..... 488
Philology (*see* Etymology)
Phipps, Sir William..... 111
Phipps & Co., J. L...476, 482, 484, 486
Phoenix, John..... 482
Phoenix & Co., J. W..... 482
Phoenix Electrical Heating Co. 647
Phyfe, James W..... 480
Phyfe & Co., Jas. W..... 480
Phonetic difficulties..... 1
Physique Sacrée, ou Histoire Naturelle de la Bible, Scheuzer, *q*.....13, 16
Piccander, *q*..... 595
Picking c..... 250
—Colombia 260
Pickslay, Joseph D.....477, 535
Pictures
—Afternoon in the court gardens, Munich, Walle's... 591
—Afternoon at the coffee table, Meith's 591
—Button's coffee house, Shepherd's, *ill*..... 593
—Café en Asie Mineure, De Ternamine's 591
—Café sur un route de Syrie, Marilhat's 591
—Café Turc. Descamp's 591
—Coffee comes to the aid of the Muse, Ruffio's, *ill*.... 591
—Coffee house at Cairo, Gérôme's, *ill*.....591, 656
—Decorative panel for Paris House, Mazerolles'..... 591
—Dutch coffee house of 1650, Van Ostade's, *ill*..... 587
—First coffee house in Vienna, Schams', *ill*..... 590
—Four times of the day, Hogarth's, *ill*..... 587
—French coffee house, Rowlandson's 593
—Goldoni in a Venetian café, Longhi's, ill..... 588
—Kaffeebesuch, Phillipi's, *ill*. 591
—Lion's head at Button's, Shepherd's, *ill*..... 591
—Mad dog in a coffee house, Rowlandson's, *ill*..... 593
—Manager Classen and his family, Milde's..... 591
—Mme. de Pompadour, Van Loo's, *ill*..... 588
—Mme. Du Barry at Versailles, Decreuse's, *ill*.....589, 590
—Napoleon and the curé, Charlet's, *ill*..... 593
—Old woman with coffee cup, Philipp's 591
—Oriental coffee house, Meyerheim's 591
—Parisian boulevard café, Menzel's 591
—Pastor Rautenberg and his Family, Milde's..... 591
—Petit déjeuner, Boucher's, *ill*..... 588
—Rake's progress, Hogarth's, *ill*..... 587
—Slaughter's coffee house, Shepherd's, *ill*..... 593
—Sweets shop of Josty in Berlin, Schmidt's..... 591
—Tom's coffee house, Shepherd's, *ill*..... 593
—Tontine coffee house, Guy's.. 593
—Washington's official welcome to New York, Gruppe's. *ill*. 593
Pictures, C. in.....587–593
Pierce, Jr., O. W..... 509
Pierce, Sr., Oliver Webster.... 509
Pierce & Co., O. W..... 509
Piers, steel-roofed (N. O.).... 325
Pilcher, *q*..... 184
Pinzon & Co..... 338
Pioneer Mills..... 508
Pique, R., *q*..... 156
Piron 94
Pitt, William..... 580
Pitt & Sons, C. F..... 485
Place, E. B..... 482
Place, J. K..... 482
Places, names of (*see* Note, p. 769)
Plantation machinery.....245–248
—Brazil 207
—Salvador 217
Plantation machines
—Guardiola drier..... 255
—Planet Junior..... 207
Plantation preparation..... 201
—Arabia 197
Plantation processes.....245–271
—Abyssinia..... 268
—Angola 268
—Arabia 245, 264, 266, 268
—Brazil 258–261
—Colombia 260

Plantation processes (*cont'd*)
—Guatemala 263
—Haiti 264
—Java 268, 269, 271
—Mexico 263
—Netherlands E. Indies..268, 269, 271
—Nicaragua 264
—Porto Rico 264
—Salvador 263
—Sumatra 268, 269
—Venezuela 261, 263
Plantations
—Abyssinia, yield per acre.... 228
—Angola
——Cazengo 230
—Australia, yield per acre.... 239
—Brazil (fazendas)
——Araqua 208
——Azevado, L. de O..... 208
——Caféeria São Paulo..... 208
——Capital invested..... 207
——do Val, F. S..... 208
——Dumont, *ill*.....205, 208, 258
——Ellis, Alfredo..... 208
——Irmaos, Alves 208
——Oliveira 208
——Principal 208
——Ribeirao Preto, *ill*..... 208
——São Martinho 208
——São Paulo Coffee Co..... 208
——Schmidt 208, 258
—Ceylon, first British (1825). 237
—Colombia 211, 212
——Namay 212
—Cuba, number..... 282
—Guadeloupe, yield per acre.. 233
—Hawaii, yield per acre..... 241
—India
——Cannon's Baloor..... 227
——Hoskahn 227
——Mylemoney 227
——Santaverre 227
——Sumpigay Kahn 227
——Yield per acre 227
—Java
——Jakatra 44
——Kedawoeng estate 6
——Typical, A. 269, 271
—Mexico
——Orduna 220
—Porto Rico
——Capital invested 223
——Yield per acre 223, 225
—Salvador, first (1876)..... 217
—Sumatra
——Gadoeng Batoe, *ill*. 217
—Venezuela (haciendas)
——Altamira, *ill*. 212
——Carmen, *ill*..... 213
——Yield per acre 213
Planting (*see also* Propagation) 200
Plants of Egypt, Alpini,..... 26
Plants, Roasting, *ill*.....379, 381, 383, 385
Platow, Moritz, *pat*. 627, 699
Platt, Jr., James, *q*. 1
Plays
—*Autocrat of the Coffee Stall, The*, Chapin 556, 563
—*Beaux' Stratagem*, Farquhar, *q*. 587, 588
—*Bold Stroke for a Wife, A*, Centlivre, *q*..... 554
—Boston, first performed in.. 111
—*Bottega di Caffè, La*, Goldoni 555
—*Café; ou, l'Ecossaise, Le*, Voltaire 556
—*Caffe, Le, Rosseau*.....554, 555
—*Caffè di Campagna, Il*, Galuppi 556
—*Caffettiera da Spirito, La*,.. 556
—*Coffee House, The*, Rosseau. 88
—*Coffee House; or, Fair Fugitive, The*, Voltaire, *q*..... 556
—*Coffee-House Politician, The*, Fielding, *q*. 554, 555
—*Devin du Village*, Rousseau.. 102
—"English comedy," *q*..... 61
—*Foire St. Germain, La*, Dancourt (1696), *q*..... 554
—*Hamilton*, Hamlin and Arliss, *q*., ill..... 556
—*Persian Wife, The*, Goldoni, *q*. 556
Plays (*cont'd*)
—*Socrates*, Voltaire 556
—*Tarugo's Wiles; or, the Coffee House*, St. Serf, *q*.... 554
Pleasure gardens (*see* Gardens)
Pletzer, *q*. 185
Pluehart, *inv*. 710
Plunket (highwayman) 578
Pneumatic Scale Corp....471, 472
Pneumatic Scale Corp., Ltd... 471
Pocoke, Edward, *q*.....12, 38
Pods 329
Poemata Didascalia, d'Olivet.. 543
Poems
—"*As long as Mocha's happy tree*," Pope's, *q*..... 549
—*Ballad of the South Sea Scheme*, Swift, *q*..... 571
—*Bouquet Blanc et le Bouquet Noir, Le*, Mery 548
—*Café, Le* (anon.) 548
—*Café, Le*, Berchoux 548
—*Caffè, Il*, Barotti 548
—*Cap and Bells*, Keats, *q*... 550
—*Carmen Caffaeum*, Massieu, *q*. 14, 544–547
—*City Mouse and Country Mouse*, Prior and Montague, *q*..... 551
—*Coffee*, Saltus, *q*. 552
—*Coffee—a Chanson* (music by Colet), *ill*. 594, 595
—*Coffee and Crumpets*, "Littledo," *q*. 550, 551
—*C. Companion* (from Arabic), *q*. 543
—*Coffee Slips, The*, Hood, *q*. 550
—*Comus*, Milton, *q*. 549
—*de Clieu*, Esmenard, *q*....8, 548
—*Flogé du Café*, L'Estienne.. 548
—*Frugality*, Pope Leo XIII, *q*. 549
—*Gilbert K. Chesterton Rises to the Toast of C.*, Untermeyer, *q*. 553
—*Giorno, Il*, Parini, *q*. ...548, 549
—*Grandeur de Dieu dans les Merveilles de la Nature, La*, ... 548
—*In Praise of C.* (from Arabic), *q*. 542
—*Like His Mother Used to Make*, Riley, *q*. 552
—*Lines* (appended to broadside) Morton, *ill*. 69
—*Lines on C.* (from French). 548
—*Long Story, A*, Gray, *q*.... 576
—*Ode to Coffee*, Price, *q*..... 553
—*Over the Black Coffee*, Gray, *q*. 552, 553
—*Pity for Poor Africans*, Cowper, *q*. 550
—*Plantes, Les*, Castel, *q*. 548
—*Rape of the Lock*, Pope, *q*. 550
—*Recipe for Making C.*, Hodhat, *q*. 663
—*Royal Drummer* (Paris) *q*... 96
—*Rules and orders of the C. house* (broadside) *q*. 60, 61
—*Song* from *The Coffee House*, Fielding, *q*., *ill*. 555
—*Three Reigns of Nature*, Delille, *q*. 547
—*To the Mighty Monarch, King Kauhee*, Sephton, *q*. 552
—*To the Coffee House*, Altenburg, *q*. 549
—*To Pasqua Rosée, q*. 54
—(Unnamed), Belighi 547
—(Unnamed), Lloyd, *q*..... 584
—*Verses*, Maumenet, *q*..... 548
—*Wealthy Shopkeeper; or, Charitable Christian, q*.... 572
—*What Every Wife Knows*, Rowland, *q*.....553–554
Poetry, C. in 542–554
Poffenberger, Jr., A. T., *q*..... 723
Poison, C. a.....58, 174
Polished C., rulings (U. S.) 337, 338
Polishing machinery 247, 248, 257
Political liberty; England's won in coffee houses 74
Politics, C. and 59, 62
Polli, Pietro 558
Pollitzer, *q*. 176
Polstorff, K.....159, 160
Ponfold, Schuyler & Co. 482
Poore, G. W., *q*. 705, 707
Pop open 389
Pope, Alexander 78, 80, 81, 575, 576, 577, 578, 583; *q*. 549, 550
—*Life of*, Carruthers, *q*. 549
Popularity of c. in U. S.; reasons for 106
Portable c. making devices
—French (1691–1754) 618
—Turkish 615, 616, 617
Portable grinding machines... 685
Portal, Antoine, *q*. 58
Porthandling charges
—Brazil 306, 315
—New York 323
Porthandling methods, U. S... 513
Porter, David (Capt.)..... 112
Porter, David D. (Admiral).. 112
Porter, Horace, Gen. *q*..... 563
Porter & Co., W. J. 480
Porto Rico Coffee Co. 488
Porto Rico Planters' Protective Ass'n 444, 445
Porto Ricos (c.) 350, 362
Posadas, J. Z. 488
Postman, London, *per*. 560
Postulart, *pat*. 640
Pot and Kettle, The, Lally, *q* 570
Potter, *pat*. 167
Potter, Dr., *q*. 181
Potter, Ellis M. ....498; *pat*. 642
Potter & Parlin 503
Potter Coffee Co. 498
Potter-Parlin Co. ...471, 641, 642
Potter-Parlin Spice Mills..... 498
Potter, Sloan, O'Donohue Co. 498
Pounding c.....697, 705
Poursine & Co., P. 486
Poursini & Co., R. 503
Powdered (*see* Grinds)
Power, *q*. 155
Power-Chestnut method 172
Prado, Paulo da Silva ...532, 534
Praedium Rusticum, Vaniére.. 543
Pratt, A. H. 502
Pratt, David S., *pat*. 539
Preanger c.....355, 373
Pregnancy, Effect of c. on... 177
Premium for early shipping (Santos) 314
Premium distribution, retail.. 429
Premiums 412, 413
—Arbuckle 522, 525
Prendergast Bros. 482
Prentiss & Page 637
Prepared Coffee 404
Prescott, Prof. S. C. 515, 714; *q*. 717
Preterre, Apoleoni P., *pat*.... 634
Price, William A., *q*. 553
Prices
—Advance notice of change... 514
—Beverage
——Constantinople 665
——London 675, 677
———(1662) 582
———(1677) 73
—Blends, retail, U. S. (1922) 722, 723
—Green
———American colonies ...467, 475
———Amsterdam (1810-12) ... 468
———England (1719) 74
———New York (1670) 105
————(1683) 125
————(1898) 471
————(1903) 472
————(1919) 474
———Netherlands (early) 44
———Netherlands E. Indies.... 312
———United States
————Early 475
————(1814) 468
————(1880-93) 527, 530
————(1911) 532
————(1913) 538
————(1921) 299, 330
————Wartime 536–538
—Guaranteeing 514
—Roasted
——New York (1791) 492
—Roasting (1885) 509
Prideaux, W. F., *q*.....1, 2
Priest, William 612
Primera (grade) 261

Primero (grade) 264
Prims. J. C., *pat.* 473, 643
Prior .....89; *q.* 551, 575
Pritchard, George W. 480
Pritchard & Sons, Geo. W.... 480
Private Estate (brand) 496
Private estates
—Java 214, 215
—Netherlands E. Indies..283, 312
Probst & Co., F. 482
Proceedings, Society of Antiquaries (1889), *q*....602, 603
Procope, Francois, *chk.* 94
Proctor, Charles E. 538
Producing countries, leading. 191
Production
—Abyssinia 284
—Africa, British E. 229, 285
— —, German E. (1913)..... 229
—Angola (1913) 229
—Arabia 282
—Argentina 279
—Australia 284
—Bolivia 279
—Brazil 273, 275, 277
— —(1850) 205
— —(1887-1902) 528–530
— —(1903, 1906) 472
— —(1906-07) 534
—Santos passes Rio (1900-01) 530
—Cape Verde Islands (1916) 229
—Celebes 217, 283
—Ceylon 236, 282, 283
—Chile 279
—Colombia 211, 278
—Congo, Belgian 229
—Costa Rica 225, 280
—Cuba 282
—Dominican Republic 281
—Ecuador 278
—Eritrea (1918) 229
—Federated Malay States ... 284
—Gold Coast 285
—Guadeloupe 281, 282
—Guam 284
—Guatemala 219, 225, 280
—Guiana, British and French 279
— —Dutch 236, 279
—Haiti 220, 281
—Hawaii 239, 284
—Honduras 234, 280
— —British 235, 280
—India 282
—Jamaica 281
—Java 215, 283
—Liberia (1917) 229
—Madagascar (1918) 229
—Martinique 282
—Mauritius 285
—Mexico 280, 281
—Netherlands E. Indies 283
—Nicaragua 280
—Nigeria 285
—Nyasaland 285
—Oaxaca (Mex.) 220
—Panama 235, 280
—Paraguay 236, 279
—Peru 278
—Philippines 284
—Porto Rico 281
—Réunion (Bourbon) 285
—Salvador 225, 279, 280
—Sierra Leone 285
—Somali Coast (French).... 285
—Somaliland (Fr. and It.).... 229
— —(British) 285
—St. Thomas and Princes I.'s 229
—Sumatra 217
—Uganda 229, 285
—Uruguay 279
—Venezuela 212
—World (1883-1921) 273
— —(1901-02) 531
— —(Statistical Table) 274
Production and Consumption 273–285
Prohibition, U. S.
—Effect on consumption 288, 689
Prolongation of Life, Metchnikoff, *q.* 178
Propagation
—Cuttings 138, 200
—Grafting 200
—Seeds 138, 200
— —Arabia 231
Proteins in c.....693, 718, 719
Proteins (*cont'd*)
—Dearth in beverage 180
Provang 56
Pruning 133, 202, 203
—Angola 230
Publick Adviser, per, q, ill. 56, 432, 581
Public Ledger, London, *per*... 327
Publicity, National campaign. 513
Publishers' Information Bureau 441
Puerto Cabello c.....348, 364
Puhl, John 502
Puhl-Webb Co. 502
Pulp, uses 136, 156
Pulping 250, 251
Pulping machinery 245, 246, 247, 248, 252, 254
Puna c. 356, 375
Pupke, John F. 482, 496
Pupke & Reid...482, 496, 499, 635
Pupke, Reid & Phelps..... 496
Purcell, Alexander H. 477
Purcell, Joseph 477, 480, 535
Purcell & Co., Alex. H..... 477
Purser (artist) 668
Purchas his pilgrimes, q...... 36
Purchas, Samuel 36
Purdy, L. J. 479
Pure Food and Drugs Act 337, 338, 410, 472, 722
Purin Bodies of Food Stuffs, Hall, *q.* 184
Purity Dried Fruits Cleansing Co. 471
Purpurescens, C., hyb. 140
Pyriform c.-pot 604
Pythagoras 13

Qahvah 2
Qahwah 1
Quadri, Giorgio..... 28
Quakers (imperfections)..... 329
Quarry, Col..... 126
Queen Anne..... 82
Queen Mary 601
Queensberry, Duchess of..... 572
Quelle, Ralph J., *pat*..... 648
Quick roast.....387, 388
Quillou, C. 146
—Java 216
Quillouensis, C. 146
Quin, James.....580, 583
Quinby & Co., W. S..... 501
Quincy, Dr..... 543
Quotation relationship (table), 330
Quotations
—Daily, how determined..... 335
—Foreign 336

Rabaut, L. B., *pat*..623, 627, 699
Racine 91, 565
Radcliffe, John.....77, 572
Rainfall requirements 198
Raleigh, Sir Walter..... 42
Rambaldi, Angelo ....558; *q.* 696
Rameau's Nephew, Diderot, *q*.. 96
Ramos, Augusto..... 531
Ramos, Francisco F..... 534
Ramponaux, Jean, *chk*.....94, 96
Rand, George..... 480
Randall, John..... 479
Ranelagh (*see* Gardens)
Ransom, Amos, *pat*..... 625
Raparlier, *pat.* 637
Rape of the lock, Pope 80
Rapid-filtration devices
—de Mattei's patent (1920).. 653
—Express 651
—Italiana Sovereign, L..... 651
—J. & S. (Still's)..... 674
—Victoria Arduino, La, (1909-20) 651
Rapid-infusion devices
—Bezzara system.....649, 651
—Ideale, *ill.* 651
—Malthey-Zorn centrif....653, 654
Rapid-percolation device
—Loysel's hydrostatic 708
Rasch, Anthony..... 612
Rasis ad Almans (*see* Rhazes)
Rauwolf, Leonhard.....43, 45, 431, 541, 543; *q.* 2, 12, 25
Ray, John.....42, 543
Ray & Co., Winthrop G...478, 479, 480
Razi, El (*see* Rhazes)
Ready and easy way to establish a free commonwealth, Milton 60
Reamer, Sr., Abraham..... 480
Reamer, Turner & Co..... 480
Rebagging
—New York.....322, 338
—Santos 304, 306
Rebellious antidote (broadside) *q.* 58
Recipes, desserts, etc.....723, 724
Reconditioning 322
Recovery, *v*..... 468
Red Can (brand)..... 441
Red D Line..... 482
Red E (brand)..... 538
Red pottage..... 13
Red Ribbon (brand)..... 441
Reed, Charles..... 127
Reed, Charles B., *q*..... 557
Reed, Nathan, *pat*.....245, 469
Reeve, Daniel..... 482
Reeve & Van Riper..... 482
Reeve, Case & Banks..... 479
Re-exports
—London 327
—United States (1921)...299, 301, 302
Refining device
—Johnston's patent (1913)... 652
Reichert, E. T., *q*..... 183
Reid, Thomas.....469, 482, 494, 496, 497, 522, 526
Reid & Co., Thomas..... 499
Reid, Murdoch & Fischer..480, 502
Reiger, *q*.....184, 185
Reimers & Meyer..... 485
Religious associations
—Christian 26
—Mohammedan ...15, 16, 17, 22
Remi c.....351, 368
Remington, J. R., *pat*..... 633
Remington, Mortimer..... 445
Remmer, Oscar..... 502
Renan 102
Renovating 158
Renshaw, William, *chk*..... 130
Rentschler, *q*..... 161
Repassing machine..... 252
Research, Scientific
—Brewing, comparative test 714, 716
—Dawson and Wetherill (1855) 711, 712
—Grinds, comparative test... 716
—University of Kansas..... 714
—Mass. Inst. of Technology 515, 716–718
—Mellon Institute..... 539
—N. C. R. A....513-515, 539, 713–718
—Prescott 515, 714, 716–718
—Robison 715
—Trigg 539
Restaurants
—London
— —A, B, C (chain), *ill*..674, 677
— —Brit. Tea Table Ass'n.... 675
— —Buzard's cake house..... 677
— —Cabin 677
— —Carlton 678
— —Corner Houses (chain).. 677
— —Express Dairy Co..... 677
— —Groom's, *ill*..... 674
— —Lipton's 677
— —Lyons (chain), *ill*...674, 675, 677
— —Peel's 674
— —Slater's 675, 677
— —Temple Bar, *ill*..... 675
— —Trust-houses, Ltd..... 675
— —Ye Mecca Co., *ill*..... 674
—New York
— —Childs (chain)..... 691
— —Dorlon's 690
— —Thompson (chain)..... 691
Restrepo, Dr., *q*..... 181
Retailing 415–429
—Blending 722
—Channels of distribution.... 415
Retaliation, Goldsmith....573, 574
Reuter-Jones Mfg. Co..... 649
Revere, Paul...110, 609, 611; *biog.* 612, 613

Revett, William, *q*..... 2
Revolution
—American 110, 125, 128
—French 100, 102, 293
Revolution, C. and....18, 20, 31
—(*See also* Democracy: Politics)
Rewards 50, 51
Reynolds, J. B..... 506
Reynolds, Sir Joshua...81, 88, 574, 580, 585
Reynolds, Hatcher & Pierce... 509
Rhazes, *q*.....11, 12, 25, 431, 541
Rheumatism, remedy..... 182
Rhodes, Benjamin..... 477
Rice, W. S..... 502
Richards, Charles..... 508
Richardson, Charles..80, 576; *q*. 584
Richardson & Lane..... 501
Richelieu, Duke of.....96, 98
Richhelmer, I. D....538, 539; *pat*. 651, 652; *q*. 715
Richter, *q*..... 159
Ricker, Harvey.....701; *pat*. 645
Ridenour, Baker Gro. Co..... 485
Riechelmann, *q*..... 159
Ries, Maurice..... 338
Riggs, J. H..... 508
Riley, James Whitcomb, *q*..... 552
Rinehart & Stevens..... 507
Rios (c.) 341, 343, 366
Ripley, D. C..... 497
Risley, Christopher..... 479
Risley, Leander S..... 479
Risley & Co., C.....479, 480, 528
Rittenhouse, John, *pat*..... 627
Ritz 678
Rivarol 98
Rivers .....186; *q*. 187
Roach, Tiger..... 579
Roasters
—Baltimore 507, 508
—Boston 501
—Chicago 501, 502
—Cleveland 507
—Detroit 508
—Louisville 505
—Milwaukee 506
—New Orleans..... 505
—New York (1790-94)....475, 476
— —(1805-1922) 492–501
—Philadelphia 501
—Pittsburgh 507
—San Francisco.....505, 506
—St Louis.....502, 503
—Toledo 506, 507
—Other cities.....508, 509
—United States.....492–509
—(*See also* Dealers, wholesale)
Roasting
—Arabia 658–662
—Australia 692
—Great Britain..... 673
— —(18th century).....695, 696
— —19th century)..704, 705, 707
—France 679
—Greece 685
—Netherlands 686
—New Zealand..... 692
—United States.....709, 710, 712
Roasting, Chemistry of...165-167, 388, 389
Roasting economics 513
Roasting, Household
—Decline of..... 635
—Devices
— —Braziers 615
— —Clay dishes..... 615
— —Corn-poppers 635
— —Cylinder 619
— —Earthenware 615, 620
— —Extemporized ..617, 635, 695, 696
— —Glass flasks (Italy)..... 623
— —Iron dippers, spiders.... 616
— —Metal plates..... 615
— —Stirrers (spatulae)..... 616
Roasting machinery...381-386, 615–654
—Coal 391, 392
—Development of..... 629
—Direct-flame 386
—French 678–680
— —Glass cylinder..... 646
—Gas 386, 640–643
Roasting machinery (*cont'd*)
—German (1860-1897)....638, 639
—Imports from Gt. Brit..... 625
—Indirect-flame 642, 646
—Inner-heated 386
—Retail 420, 421
—Sample (France)..... 679
—Wholesale,
— —Burns, J.; improvements 634-637, 644
— —French patents.....639, 640
— —German patent, first..... 683
— —Fullard's heated fresh air 643
— —Steam-power 631, 635
Roasting machines
—Household
— —Bernard's cylinder (1841) 629
— —Bull's coal (1704)..... 620
— —Elford's white iron (1660) 616, 617
— —Gee's (1852)..... 634
— —Home (1908)..... 646
— —Hyde's combined (1862).. 634
— —Ittel's glass sphere (1874) 640
— —Kuhlemann's electric ... 648
— —Lacoux's combined...625, 627
— —Lauzaune's cylinder (1829) 625
— —Lauzaune's "rocking" (1873) 640
— Lawton's perforated, gas (1912) 641
— —Lawton's quick gas (1912) 651, 652
— —Marchand's fan roaster (1866) 640
— —Martin's cylinder (1860) 640
— —Preterre's weighing (1849) 634
— —Ransom's (1833)..... 625
— —Remington's wheel of buckets 633
— —Savo (1917)..... 646
— —Schick's method (1812).. 623
— —Williamson's (1820)..... 624
— —Wood's spherical (1849) 634, 710
—Retail
— —Lambert's 50-pound..... 646
— —Lester's electric (1903).. 647
— —Moegling's electric (1906) 647
— Sales promotion value... 423
— —Seymour's electric (1921) 648
— —St. Louis, Jr..... 649
— —Talbutt's electric (1911). 647
— —Uno electric (1909-20) 647, 648
— —Warner's mill (1905).... 648
—Sample roasting
— —Burns 642
— — —Improved (1883)..... 645
— — —Swing-gate (1900).... 647
— — —Tilting (1909)..... 651
—Wholesale 646
— —Arbuckle's first (1903)... 647
— —Aromatic (electric power) 646
— —Burns Balanced-front (1908) 651
— — —Coal 391, 392
— — —Direct-flame (1900)... 642
— — —First patent (1864)... 634
— — —Special gas (1897).... 642
— — —Carter Pull-out (1846) 469, 629
— —Combination (quick gas). 641
— —Comet 638
— —Crawley patents..... 642
— —Dakin (1848) 633
— —Delphine tubular (1870) 639
— —Economic 646
— —Evans cylindrical (1824) 624
— —Faulder 640, 673
— —First direct flame (U. S.) 471
— —Fleury gas (1880-81) 638, 640
— —Fraser gas (1897-98).... 642
— —Giacomini process (1903) 648
— —Hamsley direct-flame (1898) 642
— —Henneman direct-flame (1888) 640, 642, 643
— —Holmes patent (1906)... 643
— —Hungerford patent (1882) 644
— —Hyde combined (1862)... 634
— —Ideal-Rapid 639
— —Johnston patent (1905).. 646
Roasting machines (*cont'd*)
— —Jubilee (1915-19).....643, 652
— —Jumbo 522, 524, 647
— —Knickerbocker 638, 644
— —Knowlys's cylinder (1848) 633
— —Kuchelmeister drum..... 647
— —Lambert indirect-flame (1901) 642, 646
— — —Self-contained 646
— —Lambert (French)..... 646
— —Magic 646
— —Marchand ball (1877)... 640
— —Meteor 638
— —Moderne 646
— —Monitor direct-flame..... 642
— —Morewood sliding-burner (1901) 642, 673
— —Muhlberg patents (1878). 638
— —Otto spiral-tubular (1889) 640, 641
— —Page Pull-out (1868) 637, 638
— —Pearson patents.....638, 640
— —Perfekt 639
— —Postulart gas (1888).... 640
— —Potter direct-flame (1899) 642
— —Probat 639
— —Rekord (quick gas)..... 641
— —Resson 646
— —Royal (1905).....643, 646
— —Schmidt patent (1906)... 649
— —Schnuck gas (1919)..... 653
— —Shortt electric (1919)... 647
— —Sirocco 641, 646
— —Thurmer quick-gas (1891-93) 640, 641
— —Tornado quick-gas..... 641
— —Tubermann (1877)..... 638
— —Tupholme direct-flame (1887) 640, 641
— —Typhoon 638
— —Uno 673
— —Van den Brouck cylinder 646
— —von Gumborn gas (1892) 639
— —Van Gulpen (1870)..... 638
Roasting methods
—Automatic control..... 166
—Better C.-making com...713, 714
—Burns, Jabez; views on.... 636
—Butter; use in Gt. Brit.... 673
—Early 694, 695
—Electric 386
—Goldsworthy's process..... 702
—Lard; use in Gt. Brit..... 673
—Natural gas..... 642
—Quick *vs.* slow 640, 641
Roasting plants
—France 679
—United States
— —Arbuckle 524, 525
— —First and second..... 468
—New York
— —Number (1914-1919) 515, 516
— —Early (1790-95)..... 491
— —Number (1855-56)..... 496
Roasting trade
—France 678, 679
—Italy 686
—United States..379-406, 491–515
— —Beginning of..... 522
— —Methods and prices (1845) 635
— —Retail 418
— —St. Louis (1857).....629–633
Roasts 356
—Brazilian preferences..... 691
—British preferences..... 673
—French preferences..... 680
—Greek preferences..... 685
—Italian preferences..... 686
Roberts, Mrs., *chk*..... 127
Robertson, Joseph C..... 585
Robespierre 94, 96, 102
Robinson Crusoe, Defoe 80
Robinson, Dr., *q*..... 176
Robinson, Edward Forbes 557; 11, 54, 56, 59, 62, 72, 73, 107
Robinson, Tancred..... 584
Robinson & Co., N..... 501
Robison, Floyd W., *pat*..158, 474; *q*. 715
Robusta, C.
—Botanical description..... 144
—Ceylon 236
—Cup-tests 145
—Guadeloupe 284

Robusta, C. (cont'd)
—India 227
—Indo-China, French..... 237
—Java 215, 216
—Netherlands E. Indies..... 283
—New Caledonia..... 243
—New York, Exchange excludes 329, 338
—Sumatra 217
—Trees; height (Java)..... 215
——; yield (Java)..... 216
—Uganda 353
—United States, imports..... 341
—Varieties 146
Robusta-achtigen (robusta-like) 216
Robusta hybrid (Ceylon) 236
Robusta x *Maragogipe, hyb*.. 146
Rochester, Earl of..... 575
Rodney, William..... 126
Roe, Sir T., *q*..... 2
Roettier, John.....62, 582
Rogers, *chk*..... 121
Rolamb, Nicholas, *q*..... 23
Rollins, Thornton..... 485
Romance of Trade, Bourne, *q*. 54
Romero, *q*..... 198
Ronan, James..... 508
Roodbessige, C. (Java) 216
Roome, Luke, *chk*..... 118
Roome, William P.....478, 498
Roome & Co., William P..478, 498
Rooney, John..... 475
Roosevelt family..... 690
Ropes, Joseph 468
Ropes, Ripley..... 482
Roque, P. de la.....31, 543
Rosary, The, Barclay, *q*..... 563
Rosebault, Charles J., *q*..... 671
Roseburg, William 521, 522
Rosée, Pasqua.....42, 43, 53, 54, 58, 69, 462, 543; *q*. 432
—Handbill, *ill*.....459, 461
Rosellus, Ludwig, *pat*....162, 473
Ross, C. J., *q*..... 230
Rossbach & Bro..... 485
Rosseau, Jean Baptiste 88, 554
Rosseter, J. H..... 490
Rossi, *q*..... 186
Rossignon, *q*..... 707
Rossini 103
Rota (*see* Clubs, C.-house)
Roth 510
Roth Grocery Co., Adam..... 485
Rothschilds 531
Roubiliac 84, 583, 584
Rouch, *pat*..... 621
Roure, *pat*..... 640
Rousseau, Baron Antoine, *q*... 656
Rousseau, J. J....94, 98, 102, 566
Routh, Harold, *q*..... 561
Rowland, *pat*..... 625
Rowland, Helen, *q*.....553, 554
Rowland & Humphreys..... 482
Rowland, Humphreys & Co.... 480
Rowland, Terry & Humphreys. 482
Rowlandson, Thomas.....75, 593
Rowley, Levi..... 494, 499
Roxbury "hourlies"..... 110
Royal Exchange Lloyd's..... 85
Royal Exchange (London).... 86
Royal Exchange (New York, 1752) 120
Royal Scarlet (brand)..... 441
Royal Society..... 41
Royal, Thomas M..... 471
Rubia Mills.....434, 496
Ruffio, P. A..... 591
Ruffner, W. R..... 538
Rule & Bro., Robert J..... 501
Ruliff, Clark & Co..... 505
Rulings (U. S.).....337, 338
Rumford, Count, *inv*.....557, 621, 622, 699, 704; *biog*. 697; *q*. 698
Rumsey, Walter, *q*..... 56
Runkle & Co., J. C.....479, 482
Rupert, Prince..... 69
Russell, Edward C..... 495
Russell, Frank C.....478, 499
Russell, Robert..... 482
Russell, Robert S..... 499
Russell & Co.....482, 494, 499
Russell & Fessenden..... 501
Ruth 13
Ruth, Sylvester..... 507
Rutter & Co., Thomas..... 480
Ryan & Co., James..... 506

Saccharin in c..... 165
Saffron in c..... 660
Saint-Foix 566, 567
Saint-Victor 102
Salaman, Malcolm C., *q*..... 589
Salant, *q*..... 184
Salazar, Alfredo M., *pat*..... 653
Salazar c.....349, 365
Sales by candle.....571
Salesmanship 407
Sales promotion
—Retail 423–426
—Wholesale 412, 413
Saltero, Don.....559, 560
Saltus, Francis S.....541; *q*. 552
Salvadors (c.) 347, 360
Salvandy, Narcisse-Achille, *q*... 100
Samoa c.....355, 375
Sample distribution..... 412
Samplers (N. Y. Exch.) 333
Sampling
—Brazil 303, 304, 306
—New York.....319, 321
—San Francisco..... 327
—Santos...303, 304, 306, 312, 316
Sanani c.....351, 368
Sanborn, Chas. E..... 501
Sanborn, James S..... 501
Sandys, Sir George.....12, 38, 543; *q*. 36
Sandys's Travels, q..... 36
Sand, George..... 565
Sanger, Abraham..... 480
Sanger, Beers & Fisher...480, 497
Sanger & Wells..... 480
Santa Ana c.....350, 365
Santa Cecilia, *v*..... 316
Santo Domingos (c.) 350, 362
Santos c.....341, 342, 366
Saportas Bros..... 482
Saturday Evening Post, per., q. 177
Sauvage c., *ill*..... 142
Savage 578
Savage, George E., *pat*..... 649
Savage, Richard..... 570
Saxe, Marshall..... 98
Saxon Coffee Co..... 508
Sayre, *q*.....163, 164, 166, 183
Schadheli, Sheik.....13, 14
Schaefer, Henry.....478, 535
Schaefer, J. H., *q*..... 428
Schams, Franz..... 590
Schanne, Alexandre, *q*..... 102
Scharf, *q*..... 126
Schemsi, *chk*.....19, 668
Scheuzer, J. J., *q*.....13, 16
Schick, Anthony, *pat*..... 623
Schierenberg, A..... 535
Schilling, A..... 506
Schilling & Co., A...505, 506, 507
Schipano, Mario..... 27
Schittenhelm, *q*..... 182
Schmelzel, James H..... 495
Schmidt, C..... 591
Schmidt, Francisco..... 208
Schmidt, Ludwig, *pat*..... 649
Schmidt & Ziegler..... 486
Schmiedeberg, Dr. Oswald, *q*.. 185
Schnuck, Edward F., *pat*..... 653
Schnull & Krag..... 508
Schoepffwasser, Lorentz, *pseud* 45
School of Oratory, Macklin's.. 580
Schools, information for..... 513
Schools of the wise..... 19
Schotten, Christian..... 503
Schotten, Hubertus..... 503
Schotten, Jerome J..... 503
Schotten, Julius J...503, 510, 631
Schotten, William...503, 629, 631, 633
Schotten & Bro., William..... 503
Schotten & Co., Wm...485, 502, 503
Schotten Coffee Co., Wm..... 503
Schramm, Arnold..... 477
Schramm, Inc., Arnold 477
Schroeder, Bruno.....532, 534
Schroeder & Co., J. Henry.532, 534
Schuler, John G..... 508
Schulte, A., *q*..... 156
Schultz & Ruckgaber..... 482
Schultze, *q*..... 165
Schumaniana, C..... 146
Schumberg, *q*..... 186
Schurhoff, *q*..... 185
Schurtzkwer 185
Schwartz, Joseph M..... 521
Schwartz Bros..... 488
Schweitzer & Co., M..... 488
Scialdi 14
Scolfield, Henry, *pat*..... 247
Scott, Andrew, *q*..... 85
Scott, Edwin..... 499
Scott, Sir Walter, *q*..573, 574, 579
Scott, William..... 479
Scott & Dash..... 479
Scott & Meiser..... 479
Scott & Sons, William..... 479
Scott, Dash & Co..... 479
Scott, Meiser & Co..... 479
Scott's Sons & Co., William... 479
Scotty, C. (chef)..... 691
Scriba, Schroppel & Starmen.. 475
Scribner's Magazine, q..... 664
Scudder, Gale Gro. Co..... 485
Scull, William S..... 509
Scull & Co., W. S..... 508
Scull Co., William S..... 509
Sculpture, C. in..... 599
Seal (brand).....435, 441, 465
Secchi 558
Seelye, Frank R.....511, 513
Segundo (grade) 261, 264
Seidell, *q*..... 160
Seifert, *q*..... 185
Selby, Thomas, *chk*..... 112
Selden, David, *pat*..... 625
Seligsberg, Louis..... 478
Selim I.....18, 19, 49
Selling chart..... 409
Semarang c. 355, 373
Sencial, *q*..... 156
Senè, *pat*.....623, 625, 699
Sense of Taste, The, Hollingworth and Poffenberger, *q*..... 728
Separating machinery..... 383
Sephton, Geoffrey, *q*..... 552
Service, C..... 31
—Arabia 658-663, 695
—Artistic and historic....599-614, 619, 620, 621
——Britannia ware, etc..... 619
——Clay bowls, first..... 616
——English c.-pots (1714-70) 620, 621
——Lantern c.-pots.....602, 619
——Sèvres c.-pots 607
——Sheffield-plate c.-pots..... 607
——Silver c.-pots (18th cent.) 619
——Sino-Lowestoft c.-pot.... 607
—London cafés and restaurants 674
—Oriental c.-pots 619
—Netherlands 686
—New York hotels..... 691
—Paris (Pascal's, 1672)..... 619
—Turkish 602, 617, 621, 695
Seven Truths to Teach the Young in Regard to Life and Sex, Abbey, *q*..... 177
Sèvres c.-pots 607
Seymour, Mark T., *pat*..... 648
Shade, C.-growing under..... 133
—Arabia 197
—Guam 242
—Guatemala 219
—Hawaii 241
—Requirements 201
Shadli, Shaomer (*see* Schadeli) 2
Shami c.....351, 368
Shapleigh Coffee Co..... 501
Sharki c.....351, 368
Shaw, Daniel A..... 480
Shaw, John W..... 492
Shaw, William..... 612
Shaw's Louisiana Coffee and Spice Mills..... 505
Sheaff, Henry..... 475
Sheffield plate c.-pots 607
Sheldon, Henry..... 479
Sheldon & Co., Henry....478, 479
Sheldon, Banks & Co.....479
Shemsi, *chk*.....19, 668
Shenstone, *q*..... 584
Shephard, Fleetwood, *q*..... 584
Shepherd, T. H..... 593
Sheppard, Alexander..... 501

Sheppard & Sons, Inc., Alex.. 501
Sherbet 562
—London c. houses sell 61
Sheridan, Richard Brinsley 80; *q.* 581
Sherif-Eddin-Omar-ben-Faredh, *q.* 543
Sherley, Sir Anthony.....35, 543
Sherman, Fred.....506
Sherman, Fred T.....477, 482
Sherman, Henry B..... 506
Sherman, Lewis.....506, 514
Sherman, Jr., Lewis..... 506
Sherman, Milo P..... 506
Sherman, S. S..... 506
Sherman, William..... 506
Sherman, William H..... 506
Sherman, William M..... 506
Sherman, William T. (Gen.).. 563
Sherman & Taylor..... 477
Sherman Bros. & Co..485, 502, 506
Shewbert, John, *chk*..... 126
Shewbert, Mrs., *chk*..... 126
Shields & Boucher..... 507
Shihâb-ad-Din manuscript..... 542
Shinkle, Wilson & Kreis Co. 484, 485
Shipping Board, U. S..... 338
Shipping c.....312–327
—Brazil 306
— —American vessels..... 515
—Colombia 314, 315
—Iron steamships (1868).... 476
—Longest voyage..... 316
—Santos 312, 314
—Time-table, port to port.... 316
Shipping ports, principal..... 191
Shope, W. C..... 502
Shortt, Everett T., *pat*..... 647
Shrinkage 389, 391
—Roasting 388
—Table (green c.) 393
Shubert (*see* Shewbert)
Sias, Charles D..... 501
Siddons, Mrs..... 569
Siegfried, John C..... 506
Siegfried & Brandenstein..505, 506
Siegman, John G..... 507
Sielcken, Hermann...473, 482, 511, 518, 519, 520, 523, 531; *biog.* 517, 521
—Valorization 530–534
—Woolson Spice Co..... 506
Sielcken, Hermann (Mrs.).... 518
Sielcken-Crossman contract... 519
Sierra c.....345, 359
Signs, Coffee-house
—London 602, 603
— —Bowman's 54
— —Morat (Amurath)..... 62
— —Rosée's 54
— —Soliman 62
—New York.....117, 124
— —King's Arms..... 124
Signs, Grocers'
—Lowell, Ebenezer (New York) 467
—Richards, Smith (New York) 124
Silver c.-pots 619
Silver skin.....136, 138
Silversmiths, American....609, 612
Silversmiths Society..... 612
Simmonds, W. Lee..... 478
Simmonds & Bayne..... 478
Simmonds & Co., H..... 478
Simmonds & Co., W. Lee..... 478
Simmonds & Newton..... 478
Simon, Jr., M., *pat*..... 167
Simonds, H..... 478
Sinclair, Evans & Elliot..... 508
Singleton, Esther, *q*..105, 115, 709
Sinnot, J. B..... 505
Sino-Lowestoft c.-pot 607
Sion & Co..... 340
Sir Antoine Shirlies Trauelles, Parry, *q., ill*..... 38
Sirups (*see* Syrups)
Sizing (*see* Grading) 258
Skiddy, Francis..... 479
Skiddy, Minford & Co....479, 485, 530
Skinner, Cyriac..... 60
"Skyscraper" coffee house.112, 113
Slacks 322
Slave auctions, Phila., *ill*..... 128
Slemmons & Conkling..... 508
Sloane, Sir Hans.....86, 543, 582
Sloss, Robert, *q*..... 531
Slow roast..... 387
Small, C. K.....477, 480
Small, John..... 480
Small Bros. & Co....477, 479, 480
Smalls & Bacon..... 480
Smart, Joseph F., *pat*..... 653
Smith, Adam.....81, 583
Smith, Clarence..... 480
Smith, Daniel, *chk*..... 129
Smith, Frank..... 499
Smith, George H..... 501
Smith, John, (Capt.) 105, 543, *q.* 36
Smith, John Thomas...583; *q.* 569
Smith, Michael E..... 503
Smith, Mrs., *chk*..... 119
Smith, Nathaniel..... 584
Smith, Robert..... 501
Smith, Robert A..... 501
Smith, Sydney, *q*..... 567
Smith, William T..... 501
Smith, William V. R.....523, 524
Smith & Co., D..... 476
Smith & Co., Thomas..... 700
Smith & Curtis..... 507
Smith & McKenna..... 505
Smith & McNell..... 494
Smith & Schipper..... 485
Smith & Son, Robert..... 501
Smith & Son, Thomas.....637, 639, 699
Smith & Sons, Robert..... 501
Smith Bros. & Co..... 505
Smith Bros..... 486
Smith Bros. & Co. Ltd..... 505
Smith's Sons, M. V. R..... 480
Smith's Sons, Robert..... 501
Smoke screens (Guatemala)... 219
Smollett 559
Smooth (*see* Flavors)
Smout, Jules, *pat*..... 248
Smyser, Henry L....523; *pat.* 470
Sobieranski, *q*..... 186
Sobieski, King John..... 49
Sociedade Promotora da Defesa do Café..... 446
Société de Café Soluble Belna.. 539
Société Generale 532, 534
Society of Antiquaries..... 602
Society of the Friends of Music 597
Soda fountains..... 689
Soils
—Australia 238
—Best 198, 201
—Brazil 198, 205
—Costa Rica..... 225
—Federated Malay States.... 238
—Venezuela 212
Soliman Aga..... 91
Soliman the Great.....18, 19
Sollmann, *q*.....182, 183
Soluble coffee.....404, 406
—Brands 470, 538, 539
—History of.....538, 539
—Kato's patent..... 471
—Processes 169
—U. S. Army war needs..... 539
—Washington's patent..... 471
Soluble Coffee Co..... 539
Somers, A. L..... 507
Songs of Brittany 548
Sons of Liberty..... 120
Sorenson, John S..... 520
Sorenson & Nielson.....482, 520
Sorley, William.....480, 491
Sorting machinery..... 245
Sorver, Damon & Co..... 485
Soulie 102
Soup, Coffee..... 177
Sour (*see* Flavors)
South Sea bubble.....571, 572
Southern boom (1904)..... 530
Southern Coffee Mills, Inc.... 505
Southern Coffee Polishing Mills 505
Southern Cross, *v*..... 316
Southern Pacific Co..... 489
Souvestre, Emile, *q*..... 565
Spatula (*see* Roasting machinery) 616
Specialty stores.....415, 421
Spectator, per.....75, 80, 85, 88, 558, 573, 584; *q.* 86, 87, 560, 561, 572, 575, 582
Spencer, G. L., *q*..... 165
Sperry Flour Co..... 488
Spice Mill, per.....470, 526, 527
Spice-Mill Companion 427
Splitting nickels..... 427
Spot brokers.....336, 337
Spot of leaf and fruit (*see* Diseases)
Spot Market, New York...329, 330
Spot quotation committee (N. Y. Exch.) 334
Sprague, Albert A..... 502
Sprague, Irvin A..... 477
Sprague, O. S. A..... 502
Sprague & Rhodes..... 477
Sprague & Stetson..... 502
Sprague & Warner..... 502
Sprague, Warner & Co....485, 502
Sprague, Warner & Griswold.. 502
Spreckels & Bros. Co., J. D... 488
Spring Garden Iron Works... 245
Spruce, Richard, *q*..... 200
Squier, George L..... 246
Squier Mfg. Co., Geo. L...246, 247, 469
St. Germain's Fair (*see* Coffee houses, Paris)
St. Serf, Thomas, *q*..... 554
Stachan, John, *chk*..... 119
Stacie, *chk*.....579, 580; *q.* 581
Stadium (circus), New York.. 124
Stage coaches, Boston....110, 112
Stamp Act (1765)...120, 125, 128
Stamps, Trading..... 429
Stanton, Sheldon & Co..... 479
Star Coffee and Spice Mills... 506
Star, London, *newsp*..... 585
Star Mills.....494, 499
Starhemberg, Rudiger von..49, 50
State of São Paulo Pure C. Co. Ltd. 445
Statistical Abstract, U. S., q.. 299
Statue of Kolschitzky..... 599
Steam power for roasting..631, 635
Steel-cut 401, 714
—Baker-Duncombe suit..... 649
Steele, Mrs., *chk*..... 121
Steele, Sir Richard....75, 80, 84, 557, 570, 572, 576, 577, 578, 579; *q.* 558, 559
Steele & Co., E. L. G. S..... 487
Steele & Emery..... 508
Steele & Price..... 470
Steele, Wedeles Co..... 485
Steele-Wedeles Co..... 502
Steeping 720
Ste.-Foix 94
Steinwender, Julius..... 482
Steinwender, Stoffregen..... 485
Steinwender, Stoffregen & Co. 338, 340, 482, 502
Steinwender, Stoffregen Co.... 484
Stella (Esther Vanhomrigh).. 562
Stenhouse, *q*..... 163
Stenophylla, C..... 216
—Botanical description..... 140
Stenophylla x *Abeokutae, hyb.* 146
Stenophylla Paris, C..... 146
Stephen, *chk*..... 93
Stephens, Alvan..... 507
Stephens, Henry A..... 507
Stephens, Samuel R..... 507
Stephens & Co., A..... 502
Stephens & Sons, A..... 507
Stephens & Widlar..... 507
Steppe, J. P., *pat*..... 649
Sterility, C. and.....23, 46
Sternau, Sigmund, *pat*..... 649
Sternau & Co., S..... 649
Sterne, Richard 601
Stetson, Z. B..... 502
Stevens, Alfred..... 103
Stevens, Henry B., *pat*..... 247
Stevens, W. & S..... 508
Stevens & Armstrong..... 480
Stevens, Armstrong & Hartshorn 480
Stevens Bros. & Co..... 480
Stewart, C. H., *q*..... 349
Stewart, James 478
Stewart, Robert C.....477, 498
Stewart & Co., C. M..... 485
Stewart & Co., R. C..... 477
Stewart & Walker..... 478
Stickney & Poor..... 501

Still & Sons, W. M.....647, 674
Stillman, Abel, *pat*..... 627
Stiner & Co., Joseph..... 499
Stitt, William J.....494, 497
Stitt & Co., W. J.....497, 499
Stock Exchange, New York.... 122
Stoffregen, Carl H...448, 511, 535
Stokes, John..... 129
Stoning machinery...381, 394, 395
Storage
—Havre 327
—New York.....319, 321
—Santos 303
—Venezuela 315
Storia di Venezia nella Vita Privata, La, Molmenti, *q*..... 27
Storm, Walter..... 482
Storm, Smith & Co..... 482
Story, Rufus G.....479, 496
Story & Co., R. G..... 496
Story-tellers in c. houses..666, 669
Stoufs, Joseph..... 590
Stowe, Orson W., *pat*..... 644
Strassberger, L., *pat*..... 649
Straus, Oscar..... 672
Strauss & Sons, L..... 518
Street brokers..... 337
Stringer, Mary, *chk*..... 56
Strong, Joseph..... 508
Strowbridge, Turner, *pat*..... 644
Stuart, Alexander..... 503
Stump, Aug.....482, 484
Stumpp & Co., August..... 482
Suakurensis, C. (Java)..... 216
Substitute, C., advertising.437, 438
—Charts 440, 441
Substitute-fakers 435
Substitutes 170
—Barley 13, 46
—Betony 74
—Bocket 74
—Cereal (harmful to diabetics) 165
—Chicory 46
—Corn 46
—Figs, dried 46
—Russia 686
—Saloop (sassafras and sugar) 73, 74
—United States (1st patent).. 470
—Wheat 46
Succory (*see* Chicory)
Succop & Lips..... 503
Sucrose 165
Suess-Oppenheimer, Joseph.... 47
Sugar in c....26, 58, 91, 98, 106, 667
—Cairo (first use, 1625) 657, 695
—Consumption (U. S.)..... 689
—Great Britain (17th cent...) 696
—Greece 685
—North America..... 105
Sugar of c..... 165
Sugar Trust fight.....521–523
Sullivan, Luke.....85, 584
Sully, D. J.....530, 572
Sultan, Café 658
Sultane, Café..... 694
Sumatras (c.) 355, 370-372
Sumerling & Co..... 674
Sun, London, *newsp*..... 578
Sun, New York, *newsp*, *q*..... 175
Sunshine, per.....524
Sutton & Vansant..... 485
Swain, Earle & Co..... 501
Swaythling, Lord..... 604
Swazey, S. L..... 479
Sweated c.....316, 317
—Artificial (U. S. rulings)... 337
—Sailing vessels..... 353
Sweeney, John..... 492
Sweet (*see* Flavors)
Sweet c.'s 397
Sweet-bitter c.'s 397
Swett, E. H..... 501
Swift, Jonathan....80, 84, 88, 89, 557, 562, 570, 573, 577, 578, 579, 587; *q*. 571, 575
Swift & Co., H. H..... 482
Swift, Billings & Co..... 485
Sylva Sylvarum, Bacon, *q*..38, 543
Syndicates
—Arnold-Dash-Kimball ...527, 528
—German Trading Co..... 528
Syria, The Holy Land, Carne, *q*.....668–670
Syrups, Coffee; recipe for.... 724
Szekacs, *q*..... 185
Szyszka, *q*..... 185

Tabasco c.....345, 358
Taber & Place.....434, 496
Table, The, per..... 675
Table Traits, Doran, *q*..... 705
Tachiras (c.) 349, 365
Tackaberry, William 509
Tackaberry Co., Wm..... 509
Taine 102
Talbot, Winslow & Co..... 507
Talbutt, Robert H., *pat*..... 647
Talleyrand, Prince.....103; *q*. 565
Tampico c.....345, 359
Tannin 160, 182, 711
Tapachula c.....345, 358
Tapperi, David, *q*..... 11
Tapping hands (Arabia)..... 312
Tatler, per....75, 80, 85, 86, 561, 572; *q*. 558, 559, 571, 573, 575, 584
Tatlock, *q*..... 159
Tavernier.....31, 543; *q*. 2
Taverns
—Boston
——Blue Anchor (inn) 109
——Bunch of Grapes..... 111
——Cole's (inn) 109
——First 108
——Green Dragon 613
——Indian Queen 109, 110
——King's Head 109
——Ship 109
——Sun 109, 110
——Red Lyon (inn)..... 109
—London
——Barn 584
——Golden 583
——Locket's Ordinary..... 569
——Mermaid 60
——Rose 56
——Shakespeare's Head..... 576
—New York
——Atlantic Garden House, 117, 121
——Black Horse 118
——Fighting Cocks 118
——Fraunces' 121
——Jamaica Pilot Boat..... 118
——King's Head 117
——Queen's Head 119
——White Lion 117
—Philadelphia 125
——Blue Anchor (first)..... 126
——City 125, 128, 129, 130
——Globe (inn) 126
——New 129
——Smith's 129
Taxation
—Arabia 231
—England (1714) 59
—Germany 47
——Royal monopoly (1781).. 46
—Porto Rico (exemptions)... 222
—São Paulo (valorization)....534
—Turkey 20
—(*See also* Duties; Fines; Licenses; Pure food, etc.)
Taylor, C. K., *q*..... 177
Taylor, James H..... 477
Taylor, John 578
Taylor, William 475
Taylor & Co., James H....477, 479, 485
Taylor & Co., Moses..... 476
Taylor & Levering.....484, 485
Tea 35
—Action in stomach..... 178
—American colonies
——Introduction 105, 106
——Stamp act (1765) increases consumption... 106
——Smuggled from Netherlands 106
—Antiquity 15
—Canada 687
—Discovery 12
—Great Britain
——Consumption compared with c. 288, 289
Tea (*cont'd*)
—Great Britain
——First sold in London (1657) 56
——Imports (1700-57)..... 75
——Introduced at Court.... 582
——National beverage 75
——Preferred to c..... 674
——Prices (1662, 1714) 582
——Sold in c. houses..61, 78, 80
——Taxation 59
—Eulogized by Mosely 38
——Johnson, Sam'l 568
—Europe (first used, 1610).... 25
—Literary stimulus 557, 558
—Mental efficiency, Effect on.. 186
—Philadelphia (introduction). 125
—Russia 686
—United States
——Consumption per capita (1783) 468
——Consump. comp. with c., 288, 289
——Imports (1783) 468
——Laws affecting 337
Tea and coffee pots 609
Tea and Coffee Trade Journal, per...138, 402; *q*. 34, 147, 155, 160, 161, 168, 175, 176, 177, 178, 179, 180, 181, 186, 387, 388, 399, 410, 418, 421, 422, 427, 439, 527, 553, 679, 689, 693, 715, 717, 720
—Begins publication (1901)... 472
—Ukers assumes editorship (1904) 527
—Urges nat'l organization of roasters 511
Tea gardens (*see* Gardens)
Tea party (*see* Boston; New York)
Tea-rooms (London) 675, 677
Teeth, Effects of c. on..... 175
Tegals (c.) 355, 373
T'eh (tea) 35
Teixeira, Pedro, *q*..... 2
Telephone in retail stores..... 424
Tellicherry c.....351, 369
Temperance, C. and..... 61
Tennent, Robert Bowman, *pat*. 246
Terminology 168
Terms and credits....405, 513-515
Terms and discounts (Brazil). 306
Terry, Edward, *q*..... 36
Testing (France) 679, 680
Text Book of Physiology, Flint, *q*..... 176
Teyssonnier 146
Thackeray, W. M. ....103; *q*. 563
Thannhauser & Co..... 488
Thayer, Byron T 501
Theatrum botanicum, Parkinson .....543; *q*. 41
Thebaud, Joseph 476
Thein 160
Theobromin 160
Therapeutic Gazette, per., q.. 176
Thery, *q*..... 543
Thévenot 543
Thomas, C..... 501
Thomas, Elizabeth 575
Thomas, Gov..... 127
Thomas, R. G..... 494
Thomas Co., R. G..... 494
Thomas & Son, J. W..... 508
Thomas & Turner 494
Thompson, Benjamin, *inv*.621, *q*. 163
—(*See also* Rumford)
Thompson, Dr., *q*.....159, 181
Thompson, James 492
Thompson, James Henry, *pat*. 246
Thompson, Patience 492
Thompson, W. D..... 479
Thompson & Bowers 478, 480
Thompson & Davis..... 479
Thompson Bros..... 479
Thompson Co., J. Walter..... 445
Thompson, Shortridge & Co. 478, 479
Thomsen & Co..... 479
Thomson, A. M..... 502
Thomson, James 502
Thomson, James (poet)..... 574
Thomson, A. M. & James..... 502

Thomson & Taylor 502
Thomson & Taylor Co..... 502
Thomson & Taylor Spice Co. 484, 502, 509
Thorn, A. B. 499
Thornley, Jesse 501
Thornley & Bro..... 501
Thornley & Ryan 501
Thornton, Richard J..... 505
Thornton, Richard J. (Mrs.).. 505
Thornton & Co., R. J..... 505
Thornton & Hawkins..... 505
Thorpe, *q.* 159, 164
Thousand and One Nights (*see Arabian Nights*)
Three Reigns of Nature, Delille, *q.* 547
Thum, *pat.* 158, 164
Thumb-piece on English c. pots 620
Thurber, A. D. 499
Thurber, Francis B.....557; *q.* 182, 712
Thurber, H. K. 482
Thurber & Co., H. K. 499
Thurber & Co., H. K. & F. B.. 482
Thurlow, Lord 80, 88, 572
Thurmer, Max 640, 641
Tibiriçá, Jorge 531
Times, London, *newsp.*585; *q.* 175
Times, New York, *newsp.*.671, 672
Tilloch, Dr. 585
Tillyard, Arthur 41
Timbs, John..557; *q.* 53, 69, 555, 570-585
Timby, *pat., q.* 157
Timor c.....355, 376
Tinned coffee (Great Britain). 673
Tinney, Henry C. 509
Tipping, origin of 74
To arrive 330
—San Francisco 327
Tobacco
—In c. houses..42, 77, 78, 84, 98
—Intoxication 182
Todd, Robert 118
Togami, K., *q.* 179
Toledo & Co., Filipe S..... 340
Tolimas (c.) 348, 364
Tolman Co., J. A..... 485
Tomkyns, *chk* 576
Toms, G. W. 513
Tone, Isaac E. 509
Tone, Jay E. 508, 509
Tone, Jekiel 509
Tone, W. E.....509, 510, 511
Tone Bros. 509
Tonkin c.....352, 370
Tonti, Lorenzo 122
Torner, Richard, *chk*..... 572
Torro & Co., Louis M..... 340
Totten & Bro., W. W..... 508
Touches, Vicomte des....532, 534
Tovars (c.) 349, 350, 365
Town Eclogues, Montagu..... 573
Townsend 496
Tractors, electric (Bush Co.). 322
Tracy & Avery Co..... 485
Trade
— New Orleans 485-487
—Overproduction disturbs (1898) 471
—San Francisco 487-491
— Shifting currents..293, 294, 295, 296
— United States 475-515
— —(1921) 299-302
— —Aden and 301
— —Brazil and 300
— — —Tariff preferentials .. 296
— —Booms 468, 469
— —Central Am. and....296, 300
— —Chronological review.467-474
— —Colombia and 300
— —Development (1865-1922) 297-299
— —Mexico and 301
— —Netherlands E. Ind. and. 301
— —Panic (1880) 470
— —Venezuela and 300
— —West Indies and 301
Trade and Statistics Committee (N. Y. Exch.) 334
Trade Marks, U. S...413, 469, 470
Trade names of c.'s (*see* Characteristics)
Trading 291-302
—Amsterdam (1640) 105
—Brazil 295
—Early 293
—Europe 327-340
—Germany (begins 1670)..... 293
—Havre 327
—Netherlands 293, 294
— —First cargo sold (1640).. 43
—New York (early)..... 115
—U. S. rulings 337, 338
—San Francisco and Central Am. 325
—Sweden (begins 1674)..... 293
Trading stamps 429
Traffic Assn. of St. Louis Coffee Importers (1910) 510
Trafton, C. K., *q.* 527
Traités Nouveaux et Curieux du Café, etc., Dufour, *q.* 2, 11, 432, 433
Transhipping ports, Europe.. 289
Transportation, Inland
—Abyssinia 228, 229, 308, 310
—Arabia 266, 282, 293
—Bolivia 279
—Brazil 303
—Central America 308
—Colombia 308, 316
—Nicaragua 280
—Venezuela 308
Transportation, Seven stages of 323
Travancore c.....351, 369
Travels, Herbert, *q.* 36
Travels, Rauwolf, *q.* 25
Travels, Teixeira, *q.* 2
Travels and Adventure, Smith, *q.* 36
Travels in Arabia Deserta, Daughty, *q.* 661
Travels in India and Persia, Della Valle 27
Travels of Certayne Englishmen, etc., The, Biddulph, *q., ill.* 36
Travers & Son, Joseph 445
Treatise in Latin, Meisner.... 543
Treatise on Modern Stimulants, Balzac, *q.* 557
Tree, Coffee
—Age.....203, 211, 213, 222
— —Salvador 219
—Chemistry of 155
—Height 133, 142, 202
— —Arabia 231
—Indigenous to Abyssinia..1, 5
—Origin 5
—Wood, uses for 138
—Yield 136, 203
— —Bolivia 236
— —Brazil 138
— —Colombia 211
— —Mexico 222
— —Nicaragua 227
— —São Paulo 208
Trees, Coffee
—Number of
— —Brazil 207, 208
— —Ecuador 236, 278
— —Indo-China, French 237
— —Guatemala 219
— —Pernambuco 205
— —São Paulo.....205, 207, 208
— —Venezuela 212
—Number to acre..... 201
— —Colombia 211
— —Haiti 220
— —Porto Rico 223
— —Venezuela 213
Tremont Coffee & Spice Mills. 501
Trentman & Bro., C. A..... 508
Trentman & Son, B..... 508
Triage (grade) 238
Tribune, New York, *newsp., q.* 553
Tricolator..168, 445, 651, 652, 701
Tricolette 654
Triers 389
Trigg, C. W., *pat.*.406, 539; *q.* 155, 174, 718-722
Trillado (grade) 260, 263
Trillo (grade) 264
Trinidad c.....351, 362
Triumph of C, Fakr-Eddin-Aboubeckr 543
Troemner, Henry 646, 472
True Way of Making and Preparing C., Broadbent, *q.*.. 697
Trujillos (c.) 350, 365
Trusdell & Phelps 495
"Truth in advertising" movement 435
Truxtun, Scott 444
Tubermann's Son, G., *pat.*.... 638
Tupholme, Beeston, *pat*..... 640
Turguenieff 102
Turkey gruel 70
Turkish ewer 602, 603, 621
Turkish pocket cylinder mill. 615, 616, 617
Turner, A. 508
Turner, Robert, *chk*..... 109
Turner (or Torner) Richard, *chk.* 572
Turner, William F..... 480
Tussac 8
Twitchell, Champlin & Co.... 508
Tyler, George C. 556
Tyler, Henry D. 480
Typhoid fever, Effects of c. on 181
Typografia Pizzolato 558

Uganda c.....353, 377
Ugandae, C. 146
—Ceylon 236
—Java 216
Ugandae x *Congensis, hyb*.... 146
Ukers, William H. 527
Ulman, Lewis & Co. 485
Umber, *q.* 182
Union Bag & Paper Corp. 472
Union Coffee Co. 477
Union Pacific Tea Co. 482, 501
Universal history of plants, Ray 42, 543
University of Kansas 714
University of Pittsburgh 714
Unloading 317-327
—New Orleans 323-325
—New York 317-323
—San Francisco 325-327
Unloading machinery 325, 327
Uno Co., Ltd. 647
Untermeyer, Louis, *q.* 553
Urioste & Co..... 488
Urruella & Urioste 487
Urwin, William, *chk*.....84, 574
U. S. Dispensatory, q......164, 184
Uses for c., New 457
Utter, J. W. 503
Utter, Adams & Ellen 503

Vacuum-packed c. 410
—(*see also* Containers)
Vacuum-packing, Effect of.... 168
Valentijn, *q.* 2
Valorization (Brazil) 473, 530–534
— N. C. R. A. 511
—Norris, Senator 532, 533
—São Paulo 295, 472, 534
— —Surtax 315
— Sielcken, H. 521, 531–534
—U. S. gov't action 534
Van Cortlandt museum 122
Van Dam, Anthony 475
Van dan Broeck, Pieter 43
Van den Bosch, Gov. 214
Van Dessel, Rodo & Co..... 340
Van Essen 43
Van Etten, E. 538
Van Gulpen, Alexius.....246, 638
Van Gulpen & Co. 638
Van Gulpen, Lensing & von Gimborn 638
Van Linschooten, Hans Hugo (John Huygen). *q., ill.*.... 35
Van Loan, Thomas 497, 498
Van Loan & Co. 498
Van Loan, Maguire & Gaffney 497, 498, 499
Van Loo 588
Van Ommen, Adrian 6, 43
Van Ostade, Adriaen 44, 587
Van Outshoorn 6
Van Vliet, C. W., *pat.*..... 634
Van Zandt & Co., M. N..... 508
Vancouver 239
Vanderhoef, George W. 479
Vanderhoef & Co., George W... 479
Vanderwerde, P. H., *pat.*..... 637
Vane, Gov. 109
Vanessa (*see* Vanhomrigh)

Vanhomrigh, Esther 562
Vaniére 543
Vankorn, Guggenheimer & Co. 501
Vardy, James, *pat* 627, 699
Variegata, C., hyb. 140
Varnar 43
Vassieux, Madame, *pat.*....627, 700
Vatel, Charles, *q.* 566
Vaughn, V. C., *q.* 176, 177
Vauxhall garden, *ill.*...81, 82, 83
Velloni, *chk.* 103
Venard, G. 505
Venetian Republic, The, Hazlitt,, *q.* 28
Venezuelas (c.) 348, 364, 365
Verborg, Henry 503
Verdier & Closset 507
Verlaine, Paul 94
Verri, Alexander 558
Verri, Pietro 30, 558
Vertu and use of c. Bradley, *q.* 293
Vesling (Veslingius), *q.*...12, 26
Vickers, T. L. 498
Victoria Arduino-Societa Anonima 651
Victorias (c.) 341, 343, 367
Vie privée d'autrefois La, Franklin, *q.* 6
Viehoever, A....160; *q.* 144, 145
Vienna
—Besieged by Turks (1693).. 49
—Coffee-makers' guild 50
Vienna, Relation of the siege of, Vulcaren, *q.* 50
Villon, François, *q.* 135
Vilain 594
Vincent c.-pot 604
Vintschgau 186
Virey, *q.* 20
Virgil 543
Visconti 558
Vitamins 180
Vitamines, The, Funk, *q.*..... 180
Viviani, Count, *ill.* 578
Volt, Carl V., *q.* 177, 179
Volkman, George 506
Voltaire.....94, 98, 178, 550, 557; *q.* 554, 565
Voyage de l' Arabie Heureuse, La Roque.....543; *q.* 15, 31, 32, 34, 197
Voyage into the Levant, A. Blount, *q.* 38
Vulcaren, John P. A.. *q.*..... 50
Vyal, John, *chk.*..... 109

Wagama, r. 316
Wagner & Co., H. M. 485
Wagon-route distributers
—United States 415, 416, 417
—France 681
Wagstaff, David 476
Wahlbis 542
Waite, *pat.* 625
Waite, Creighton & Morrison.. 477
Wakeful monastery 14
Wakeman, Abram 473, 478
Walbridge, Augustus 480
Walbridge Inc., Augustus M. 480
Wales, Henry 508
Walker, John, *pat.* 245, 246
Walker, Joshua 478
Walker Sons & Co., Ltd 246, 247
Wall, Dr. 579
Wallace, Alexander 475
Wallace, Alfred Russel, *q.*... 200
Wallace, C. L. H. (Mrs.), *q.*... 181
Wallace, Hugh 475
Wallace, John William, *q.*..... 126
Wallace, William, *q.* 657
Walle, Friedrich 591
Wallen, Geo. S. 482
Wallen & Co., Geo S. 482
Walpole, Sir Edward 583
Walpole, Horace...578, 580, 584
Walsh, Rev. Robert, *q.* 557, 663–664
Walton, William 475
Wanni Rukula, C. 144
Ward, Ned, *q.*.....77, 84, 575
Wardell, *q.* 185
Ware (architect) 583, 584
Warfield, John D. 502
Warfield, W. S. 502
Warne, E. 508
Warner, Alonzo A., *pat.* 648, 649
Warner, C. M. 538
Warner, Ezra J. 502
Warnier, *q.* 164, 169, 719
Warren 110
Warren & Bedwell 506
Warren & Co. 482
Warton Joseph 573
Warwick, Lady 575, 576
Wascana, *v.* 316
Wash-brew 58
Washed *vs.* Unwashed....250, 251
Washing machinery 247
Washington, G., *pat.* 471, 538
Washington, George (Gen.) 120, 130, 468
—Official welcome, New York, *ill.* 593
Washington, Martha 130
Washington Refining Co., George 538
Washington and Jefferson college 521
Washington's Prepared C., G.. 538
Wastell 603
Water extract 168, 169
Water power, Nicaragua..... 264
Waterbury & Force 482
Water-supply requirements... 198
Watering, Excessive..... 513
Watjen, Toel & Co. 482
Watson, *q.* 126
Waygood, Tupholme Co. 641
Wear, F. F., *pat.* 651
Webb, James R. 501
Webb, Rudolphus L., *pat.*..... 644
Webb, Thomas J. 502, 511
Webb & Son, James R. 501
Webb, Cheek & Co..... 509
Webb, Hughes & Co. 509
Webb-Puhl Co. 443
Webber, *q.* 186
Webster, *q.* 704
Webster, Daniel 110
Webster, George 124
Wedding Breakfast (brand).. 441
Wedgwood 607, 612
Wedmeyer, *q.* 187
Weighing machinery 403, 471
Weighmasters (N. Y. Exch.).. 333
Weikel & Smith 501
Weikel & Smith Spice Co. 470, 501, 635
Weir, J. B. 499
Weir, Ross W...466, 448, 499, 511, 513, 514; *q.* 424
Weir & Co., Ross W. 495, 499
Weir, Inc., Ross W.....495, 499
Weissman, John 488
Weisweiller, *q.* 163
Weitzmann, *pat.* 158
Welch, Amos S. 492
Welch & Co. 488
Wellman, C. P., *q.* 410
Wells, D. Henderson 482
Wells, John 482
Wells Bros 482, 485
Welsh, Ebenezer 495
Wendroth, Clara 519
Wessels & Bros., C..... 482
Wessels, Kulenkampff & Co.... 482
West Indies (c.).....350, 351, 361, 362, 363
West & Melchers 485
Westcott, *q.* 126
Westen T. & S. Co., Edw..... 485
Westfal, J. R. 496
Westfeldt Bros. 485, 486
Weston & Gray 482
Westphal, *pat.* 167
Wet method...136, 249, 252, 254
Wet roast 389, 391
Wetherill, Charles M., *q.* 711, 712
Weyl & Co., G. 482
Weyl & Norton 482
Wheeler & Co., Ezra 478, 479
Whieldon 607, 612
White coffee 674
White, A. E., *pat.* 651
White, Francis, *chk.* 87
White, Herman M., *pat*..... 625
White, Peregrine 616
White House (brand) 441, 465
White Rose (brand) 441
Whitefoord, Caleb 573
Whiting & Taylor 502
Whiting, Goeble & Co. 502
Whitmarsh, Theodore F..... 535
Wholesale Grocers Corp. 502
Wholesaling roasted c. 407–413
—Capital invested, U. S..... 415
—Sales, annual, U. S..... 415
Wholesome advice against the abuse of hot liquors, Duncan, *q.* 59
Wickersham, Att'ney Gen..... 593
Widlar, Francis 507
Widlar & Co., F. 507
Widlar Co..... 507
Wiji Kawih 11
Wilcox, O. W., *q.* 147
Wild (*see* Flavors)
Wild c. (Abyssinia) 284
Wild, James 469, 492
Wilde, Herbert W. 492
Wilde, John 492
Wilde, Joseph 492
Wilde, Samuel.....482; *biog.* 492
Wilde, Jr., Samuel 492
Wilde & Sons, Samuel 492
Wilde's Sons, Samuel 494, 499
Wilde's Sons Co., Samuel 492
Wiley, Harvey W., *q.*..175, 176, 180, 182, 396
Wilhelm, R. C., *q.* 387, 393
Wilke 579
Wilkie 583
Willcox, O. W., *q.* 161, 388
Wille, Theodor 532, 534
William III 601
Williams, Frank 477, 498
Williams & Co., R. C. 494
Williams & Potter 494
Williams & Taft 507
Williams, Chapin & Russell.. 478
Williams, Dimmond & Co..... 488
Williams, Russell & Co....477, 478, 535
Williamson, C. G., *q.* 62
Williamson, Peregrine, *pat.* 468, 624
Williamson, S. H. 498
Willis, Thomas, *q.* 58
Wills & Co., Alexander 508
Willson, Wm. B. 485
Wilson, Increase, *pat.* 623
Wilson, Woodrow 534, 535
Wilson & Bowers..... 480
Wilson & Co., J. W. 480
Wimmer, *pat.* 162, 473
Windbreaks 201
Window-displays 425
Window-trimming contest..... 455
Wine
—C. classed as.....1, 17, 20
—C. a substitute for 15, 42
—Made from fruit 15
—Made from hulls and pulp.. 693
Wing Bros. & Hart 498
Winter, H., *pat.* 158, 167
Winter & Smillie 482
Winthrop, Gov..... 109
Winton, Andrew L., *q.* 150
Wise, Capt..... 128
Withington, Elijah, *biog.*..... 492
Withington & Pine 492
Withington & Wilde 492
Withington, Francis & Welch 492
Withington, Wilde & Welch.. 494
Witsen, Nicolaas 6, 43
Wittenagemott 582
Wogan, Sir Charles 575
Wolf & Seligsberg 478
Wolff, L. 485
Wolseley, Viscountess 604
Women as coffee sellers..... 56
Women's petition against c., The, pamph., ill......70, 71
Wood, Jr., H. C., *q.*.....176, 185
Wood, Jarvis A., *q.* 431
Woods, Rufus 485
Wood, Thomas R., *pat.* 634
Wood & Co., Thomas 501
Woodward (actor) 579, 580
Woolson, A. M. 506, 523
Woolson Spice Co....503, 506, 521, 523
World War effects
—Arabia 268
—Consumption 289
—Guatemala 219
—Mexico 222
—United States trade.....534–538
——Imports 286

World War effects (*cont'd*)
——San Francisco 325
—World trade...190-195, 294, 296
World's Commercial Products, The, Freeman, *q.* 133
World's Work, per. q......531, 532
Worth, J. G. 499
Wright, *q.* 167
Wright, George C. 501
Wright, George S....448, 501, 629
Wright, John S. 482, 491
Wright, John T. 488
Wright, Warren M. 501
Wright, Hard & Co. 482
Wrightsville Hardware Co.... 644
Wroth, Warwick, *q.* 82, 83
Wurffbain 43
Wurttemberg, Duke of..... 47
Wyatt, Charles, *pat.* 621, 699
Wycherly 575
Wyld, F. Lehnhoff 538

XXXX (brand) 44

Yaffey c.....351, 368
Yarrow, Mrs., *chk.* 555
Yates & Dudley 508
Yellow fever, effect of c. on... 182
Yemeni c.....351, 368
Yorke, Duke of 554
Young, Arthur, *q.* 100
Young, D. K. 482
Young, Samuel 507
Young, Mahood & Co. 507
Young-Mahood Co. 507
Youngs & Amman 477
Yuban (brand).....441, 462, 524
Yuban advertising 462–465
Yuengling, D. G. 508
Yungas c.....350, 367

Zamore 590
Zamzam 18
Zanzibar c.....353, 377
Zarf (cup-stand) 661
Zecchini, G. B. 549
Zenetz, *q.* 185
Ziegler Arctic expedition..... 538
Zilmore & Co., A. G. 508
Zinmeister Sr., Frank 505
Zinsmeister, Jacob 505
Zinsmeister, L. G., *q.* 389
Zinmeister & Son, Frank 505
Zinmeister & Sons, J. 505
Zola, Emile 103, 565
Zoller & Little 508
Zwaardecroon, Henrious 6
Zwick, Charles 505